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SOME FRACTURES OF THE LOWER EXTREMITY.¹

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I HAVE selected the subject of some fractures of the lower extremity as being one of general interest. Moreover, it is a subject in which I have had considerable experience because the treatment of fractures of the lower extremity constitutes the greater portion of the work in the fracture wards at the Sydney Hospital. Most of the fractures of the upper limb are treated in the fracture out-patient department and only those patients are admitted in whom reduction has failed or some other complication, such as a compound fracture, necessitates their admission.

In January, 1922, a new system of records was introduced at the Sydney Hospital and this has been of great assistance in writing this paper. The "accident" and "fracture" sheets have proved of considerable practical use.

¹ Read at a meeting of the Eastern District Medical Association, Kempsey, New South Wales, on March 14, 1925.

The treatment of fractures of the lower extremity is too large a subject to consider in an address, so I propose first to make a few remarks on the treatment of fractures in general, confining my remarks mostly to matters of practical interest and to methods of treatment. Secondly, I will refer to several fractures which often present difficulties in treatment, and try and indicate those measures which have proved useful.

THE GENERAL TREATMENT OF FRACTURES.

I think we all agree that it is highly important to have a radiogram taken and to have a consultation with another doctor. As many fractures are ultimately discussed in the courts of law I need hardly say that a few concise notes may prove useful. "Eternal vigilance" should be our motto when treating fractures. The injured limb should be frequently seen and examined. Massage and early movement are also of importance.

When there is much deformity I think that a general anæsthetic should be always administered. It relieves the suffering of the patient and facilitates reduction.

Open Reduction of Fractures.

Open reduction of fractures may be carried out in two ways: (i.) without internal fixation and

(ii.) with internal fixation, such as Lane's plates.

I do not wish you to think that a "Bloody Moloch" presides over the treatment of fractures at the Sydney Hospital. One must emphasize the importance of a rigidly aseptic technique. One not infrequently has to wait until abrasions or superficial wounds which are the site of suppuration, have healed. With the exception of certain fractures, such as fractures of the patella, I think open reduction should be employed only when conservative measures have been carefully applied and failed. There always remain fractures which cannot be reduced by manipulation or extension for several days and it is these which call for special treatment.

Without Internal Fixation.

In a number of cases open reduction is carried out. The tissues separating the fractured ends are removed or retracted. Frequently the configuration of the ends of the bones is such that they dovetail, they remain in apposition after reduction despite movements of the limb. The incision is then closed and the limb placed on appropriate splints. I have found this method of considerable use in certain fractures of both bones of the forearm, in the supra-condylar fractures and epiphyseal separations of the humerus in children and in fractures of the humerus with wide separation of the broken ends. In some cases the exercise of some carpentry may adapt the ends of the bones so that they will remain in apposition.

With Internal Fixation.

Although one always endeavours to avoid the introduction of some metal retaining apparatus, such as Lane's plate and screws, wire *et cetera*, there are certain cases in which I think it is wise to do so. As a rule I think it advisable to use plates or wire with a fractured femur after an open reduction. The muscles of the thigh are so powerful that they may easily displace the fragments after reduction and in addition, while the patient is being moved from the operating table to the ward, the fragments may be easily displaced. I have known this to happen in one of my own cases and also in those of other surgeons. Some surgeons rely on the Schmerz hook to maintain the bones in position after an open reduction and in many cases this has been successful. Absorbent bone plates and screws may also be used.

I always endeavour when applying a Lane's plate to keep the drill holes as far away from the site of fracture as possible with the idea that they and the screws may interfere with union. Kangaroo tendon may be employed to retain certain fractured bones in position, but it is soon absorbed and cannot be relied on to retain fragments which are liable to slip, such as fractured femur. Aluminium bronze wire is very satisfactory when the use of wire is indicated. Even after plating I think, it is wise to apply extension both for the patient's comfort and to prevent any undue strain being put on the plate and screws. I have seen cases when the

plate has not fully controlled the fracture. Use a strong plate when plating a femur. A plaster of Paris splint may be applied after plating, but is not so comfortable for the patient as a suspended Hodgen splint.

A Lane's plate is often of use in oblique fractures of the tibia and fibula. Here also the bones may be kept in position by shaping the ends so that they remain in position when the fracture is reduced.

Although I have never had any trouble with Lane's plates, it is my practice to remove them at a later date from all superficial positions, such as the tibia. Removal of a plate from a femur is a fairly severe operation and I have not made a practice of removing them from this position and so far no trouble has ensued. Sinclair recommends the removal of plates. Dr. J. G. Edwards thinks all plates and screws should be removed as they tend to cause absorption of bone.

Compound Fractures.

The prognosis is much more favourable in those fractures "compounded from within" and in these the wound usually heals with little or no sepsis. In those compound fractures in which there is gross soiling of the wound, usually "compounded from without," those methods used in the treatment of gun-shot wounds in the war are applicable, namely excision of wound and free drainage with or without the insertion of Carrel's tubes. Later secondary suture may be done in certain selected cases. Do not remove loose fragments of bone which are attached by periosteum. Internal fixation with a Lane's plate is rarely performed in compound fractures and most surgeons are at present opposed to the insertion of Lane's plates in compound fractures.

Delayed Union or Non-Union.

Union may be delayed even when the bones are in good or even perfect position. In my experience the most common site for this in the lower limb is in the lower third of the tibia. The application of a walking calliper is one of the best means of treating this condition. Union may be delayed for several months in this position and it is important to realize this and avoid unnecessary operative treatment. When union is delayed it is wise to inquire if the patient is suffering from any disease, such as syphilis. If such be the case appropriate treatment should be given.

Non-union must be extremely rare in simple fractures of the femur.

A condition which one sometimes meets in fractures of the tibia and fibula, is non-union of the tibia associated with union of the fibula, the fractured ends of the tibia being held apart as it were by the fibula.

I have several times treated this condition successfully by means of a massive bone graft, either of the sliding variety or with an autogenous graft from the opposite tibia. In the case of a sliding

graft I think it is best cut with a single bladed saw. It can then be made in the shape of a slightly tapering wedge which can be driven downwards and thus firmly fixed.

I have seen a patient treated by Dr. Corlette who was suffering from non-union of the tibia of a similar nature and who had in addition a persistent sinus. Bone grafting was here out of the question on account of the mild sepsis present. Dr. Corlette successfully treated it by shortening the fibula and freshening the end of the tibia.

FRACTURES OF THE LOWER EXTREMITY CONSIDERED IN DETAIL.

Frequency.

As regards the frequency of fractures of the lower extremity the following figures are of interest: Since January, 1922, to the present date, March 4, 1925, there have been admitted to and discharged from the Sydney Hospital patients suffering from the following fractures of the lower extremity:

Fractures of the femur	185
Fractures of the patella	54
Fractures of the tibia and fibula	246
Fractures of the tibia (alone)	225
Fractures of the fibula (alone)	205
Fractures of the tarsals and metatarsals ..	68

Fractures of the Femur.

I find that in the records of the first one hundred and forty-four patients admitted with recent fractures of the femur the sites of fracture were as shown in the accompanying table.

Site of Fracture.	Number of Cases.	Average Age of Patients.
Neck and great trochanter	79	60
Upper third of shaft ..	13	40
Middle third of shaft ..	24	22
Lower third of shaft and condyles	28	38

Ten deaths are noted in this series all occurring in patients suffering from fractures in the neck or trochanteric region. The average age of the patients who died was seventy-two years. The oldest patient in the series was aged eighty-seven years and the youngest thirty-five. The cause of death was mostly some pulmonary complication and in one case death was due to anuria.

Extension by means of Schmerz's hook was used on forty-two occasions, thirty-five of these being in cases of fracture of the shaft. It is in fractures of the shaft that the greatest amount of shortening is encountered. I have not had sufficient time to go fully into the final results of treatment, but the greatest amount of shortening in fractures of the shaft which I can find recorded, is 1.8 centimetre (three quarters of an inch), with one exception, a case of my own, in which the patient was admitted to hospital ten weeks after the initial fracture.

Fractures of the Neck of the Femur and of the Region of the Great Trochanter.

In the aged the treatment of fracture of the neck of the femur and in the region of the great trochanter is often a matter of secondary importance. In examining injuries in the region of the hip gentleness in manipulation is of importance, otherwise an impacted fracture may be disimpacted. The age and general condition of many of these patients contra-indicate any operative treatment such as inserting a bone peg or nail through the trochanter into the neck or head of the bone.

Briefly our treatment of these cases in the weak and debilitated consists in the use of sand bags and a sitting posture, preferably in a Fowler bed frame.

A word in passing on the Fowler bed frame. I show you a diagram of a pattern with footpiece which is now used in the wards at Sydney Hospital and which has replaced the wooden type which I first introduced there. The wooden type was very useful in casualty clearing stations, more particularly in the treatment of wounds of the thorax. The frame is of great use and affords much comfort to patients who may require nursing in the sitting posture. Although there are a number at Sydney Hospital, the fact that it is always difficult to obtain one is evidence of their popularity among the nurses. Briefly it prevents the patient "slipping down."

In those patients whose general condition is good, the limbs are usually put up in an abducted position in Hodgen's splints suspended to a modified Balkan beam with extension applied by means of adhesive plaster. In a few cases where the shortening has been considerable, Schmerz hooks have been used.

The results in impacted fractures, particularly the per-trochanteric (extra capsular variety), may be excellent. It is important to prevent these patients bearing their weight on the affected limb for, say, six months, otherwise *coxa vara* may result. Even when the position of the bones is good the injury may be followed by a traumatic arthritis of the hip joint. Fracture of the neck near the head (intracapsular) unless impacted rarely unites even if nailed or pegged with a bone peg (Dr. J. G. Edwards).

The use of a plaster abduction spica is not feasible in many of these cases. I think it is highly important to try to prevent stiffness of the ankle and knee points in these patients by early movement and massage. Stiffness of these joints is a serious disability when associated with an ununited fracture of the neck or osteo-arthritis of the hip joint.

Fractures of the Shaft of the Femur.

It is in fractures of the shaft of the femur that the maximum of shortening occurs and therefore treatment by extension has to be effectively applied. It is now extremely rare for a patient who has sustained a fracture of the shaft of the femur, to be discharged from Sydney Hospital with even 2.5 centimetres (one inch) of shortening. Practically all patients are on discharge fitted with a walking

calliper (Thomas knee splints). I am here referring to those with definite displacement of the fragments.

To these patients, after the initial shock has passed, we usually administer a general anæsthetic and an attempt is made to reduce the fracture. Buck's extension is applied and the limb put up in a Hodgen's or Thomas knee splint suspended to a fracture frame, a modification of the Balkan beam. The opposite limb is usually suspended in a Hodgen's splint and both limbs are abducted to a greater or lesser degree. Six and a half kilograms (fifteen pounds) extension is applied and if there still be shortening, the weight may be increased to nine kilograms. I have used up to 11.25 kilograms (twenty-five pounds) extension by this method, but it is rarely that this can be applied owing to slipping of the adhesive plaster. The effect of the extension is gauged by frequent measuring of the limb and by an X-ray photograph taken with a portable X-ray apparatus.

If at the end of several days the position of the bones be still unsatisfactory, what should one do? It is unlikely that persistence with the treatment will give a perfect result, so one has either to apply more effective extension or perform an open reduction.

In fractures with great shortening and much comminution I usually apply extension by means of a Schmerz hook at once.

The Schmerz Hook.—I would here like to pay a tribute to the work done by Dr. C. E. Corlette in introducing the Schmerz hook to the practice of the Sydney Hospital. He has very kindly given me the following account of its introduction and use:

I had for years used the Thomas splint used in the Thomas way, with the ring pushed against the pelvis and the limb drawn down to bottom end of splint by adhesive plaster. I had also used the Robert Jones abduction frame in numerous cases. Whatever the statements made or teaching given, it is a fact that the stock Thomas splint never presses on the ischial tuberosity, but on the pubic bone. The pressure is intolerable. The patient has a very bad time throughout. The nutrition of the pressed on skin is interfered with, however careful the nurse is to push new skin into the site of pressure. This would be justifiable if it gave good results. Jones says it abolishes shortening. Jones may have found it so in children. In a man it does not prevent shortening, sometimes serious shortening. The Robert Jones abduction frame is even more uncomfortable. The end results only satisfy men who are satisfied with very poor results. It is a common thing for a patient to recover with 3.75 centimetres (one and a half inches) or even five centimetres of shortening when either of the above methods is used. The Thomas splint used as a Hodgen is another proposition altogether—it is comfortable. But adhesive plaster becomes painful and interferes with the nutrition of the skin if much weight is applied. Many patients cannot bear more than 4.5 kilograms (ten pounds) without great pain and discomfort, yet it often requires much more to abolish shortening. The ready reply is that discomfort and bad results are due to lack of care, poor mechanical sense and lack of experience on the part of the surgeon. Such a reply would condemn any method that has to be used by average men. It is equally futile to blame the nurse. I had always looked with horror and aversion at the idea of pins, tongs and the like wounding

the skin as barbarous and unjustifiable torture. But at length I realized that no torture could be worse than that I had been inflicting and that without the compensation of good end results. I was disgusted with the results, not that they were any worse than other men's; but something must be done. Having reached that point, I came across an article by Eastman and Bettman in *Surgery, Gynecology and Obstetrics*, October, 1917, page 456. They described the Schmerz appliance which they had learned to use in an Austrian military hospital at Vienna in the earlier part of the war. They emphasized its comfort and the control it gave. I made sketch drawings and measurements, working this out from measurements of limbs. I had one made. It was a triumphant success, very comfortable in use and I got a perfect result, not always since attained. Then I had others made with various angles of recurvature, degrees of taper, gauge of steel, length over all and so forth for experimental purposes. I still get much dissatisfaction out of my results, but the patients are comfortable now, which they were not before, and shortening has been practically abolished. And though I am dissatisfied with many results, I have come to think that they are on the whole as good as anyone gets at present.

There are men who would call these methods which they have not tried, "barbarous." And yet these same men will not shrink from inflicting on every patient possible the much more barbarous and risky plating operation.

As to the frequency with which the Schmerz hook was used. In the one hundred and forty-four cases referred to above I find that it was used on forty-two occasions and on thirty-five of these for fractures of the shaft. In this series there were sixty-five cases of fracture of the shaft so that it was used in somewhat over 50%. In none of these cases did any bone or joint infection occur. The Schmerz hook may appear at first sight a barbarous instrument, but the patients complain of little or no discomfort and in many cases the effectiveness of the extension affords great relief and they state that they are much more comfortable than with extension by means of adhesive plaster. I have found it of great use in badly comminuted fractures of the shaft which do not lend themselves readily to internal fixation. In one such case I obtained a perfect result as regards length of limb and function. It is in fractures with much shortening that extension by the Schmerz hook has proved so effective. Dr. J. G. Edwards tells me that he has seen no bone disease arise from their use and that they are very effective in reducing shortening and overcoming the overlapping of fragments.

It is important in applying the hook to draw the portion of skin through which the points are to be inserted, proximally before their insertion. It is not our custom to apply hooks near an infected wound. They may be inserted near a fresh abrasion.

For what period is it safe to apply extension with a Schmerz hook in fracture of the femur? About three weeks is the usual period. After this a Buck's extension and a 6.75 kilogram (fifteen pound) weight is sufficient. I have left the hooks in longer, up to four weeks when there has been no sign of inflammation of the skin. The wound made by the hook in the skin is usually dressed with gauze soaked in methylated spirit or a dry dressing.

Has any disease of bone followed the use of the Schmerz hook during, say, the last six years at Sydney Hospital? Dr. H. K. Porter, late Medical Superintendent at Sydney Hospital, informs me that the only case in which he saw a sinus persist after the use of a Schmerz hook, was one in which it had been inserted into the *os calcis*. After curettage this sinus healed readily.

No death was attributable to hooks inserted into the femur. Can this be said of open reduction in cases of fracture of the femur? I have found extension by means of the Schmerz hook particularly useful in long oblique fractures of the shaft with much overlapping and in greatly comminuted fractures which do not readily lend themselves to open reduction and internal fixation.

Open Reduction.—Open reduction of a fractured femur should always be regarded as a major operation. It should not be lightly undertaken without adequate assistance. I usually expose the shaft by an incision running through or close to the posterolateral, intermuscular septum. I would just like to refer to one type of fracture which I have frequently found resist reduction with extension by a Schmerz hook. It is a transverse fracture of the shaft, sometimes in the upper third and there is considerable overlapping of the fragments, I have applied eighteen kilograms (forty pounds) or more of extension by means of a Schmerz hook without reducing this fracture. Even when the overlapping is almost reduced, some projecting spur of bone may often prevent complete reduction. It is in this type in which I have often been compelled to do an open reduction. Dr. Corlette tells me his experience coincides with mine in this class of fracture. Tyre levers are often of use when doing an open reduction. The temporary insertion of a Schmerz hook for purposes of extension during an open reduction is an efficient way of applying this. Bryant's method has proved very efficient in fractures of the femur of children.

Fractures of the Patella.

In consulting the records of forty-nine patients admitted, I find that thirty-six were males and thirteen females. The average age of the patients admitted was thirty-nine years.

Twenty-eight patients were submitted to operation and one was discharged for operation in another hospital. The bone fragments were drilled in seven instances. The suture material used was as follows: kangaroo tendon was used in twenty-one cases, chromicized catgut in two cases, silver wire in four cases and in one case the kind of suture material used was not stated.

The patella of one patient, a Chinese, was resutured with aluminium bronze wire. No ill results followed operation.

Patients suffering from fractures with no displacement were not operated on and these included several vertical fractures.

One man, aged eighty-one, suffering from fracture with wide separation of the fragments, was

treated by conservative methods. The patient was satisfied with the result, but he did not obtain a full range of movement at the knee joint.

All patients with separation of the fragments were submitted to operation with the exception of those mentioned above. This practically means that the patients whose fractures were caused by muscular action, were operated on. Those with fractures caused by blows on the knee did not require it.

As you know, the amount of separation is dependent on the amount of tearing of the capsule of the joint. Accurate apposition without open operation cannot be obtained owing to the fact that the aponeurosis on the anterior surface of the patella (portion of the quadriceps tendon) becomes infolded round the fractured surfaces.

Suture of the capsule and aponeurosis with or without an encircling suture of the patella was the operation most frequently performed. It is wise to place the limb after operation on some splint which keeps the knee extended. The Chinese referred to above, loosened his bandages and flexed his knee and caused a wide separation of the fragments which had been sutured with kangaroo tendon.

After two or three weeks the knee joint is usually supported by a plaster splint and later on a Thomas's walking calliper or a long knee cage in which the range of movement at the knee joint can be gradually increased. Massage is applied during convalescence. The ultimate results are excellent.

Fractures of Both Bones of the Leg.

It is among fractures of both bones of the leg that we may meet cases which tax our ingenuity to the utmost, for it is in fractures of both bones that shortening and angulation are apt to occur unless great care be taken.

In looking through the records of two hundred cases I find they included all from simple fractures without displacement to compound fractures in which the damage to the soft tissues was so great that amputation was required. As regards treatment I think back and side splints were applied in most instances when the bones were in good position and later when the swelling had subsided or abrasions healed, a plaster of Paris splint was used. Open reduction was done in fifteen cases and plates were used in ten of these. Wire was used in one and four were reduced and no plate or wire was introduced. Extension was applied by means of the Schmerz hook inserted into the *os calcis* in twenty-two instances. In some cases extension was applied by means of a Buck's extension and in others a Sinclair's skate was used.

Fractures of Bones Near the Ankle Joint.

In dealing with fractures of bones near the ankle joint, such as Potts's fracture, I am not considering fractures in which there is no displacement of the bones. It is among those with displacement that we find our greatest difficulty. Even when the bones are brought into "good position" the

ultimate results may not be satisfactory, the patient may complain of pain and discomfort when walking.

Always regard a Potts's fracture as a fracture dislocation of the ankle and you will be less liable to fail to reduce the backward and lateral displacement of the foot. Dr. Corlette tells me that in this injury there is one structure which he has never seen torn through and that is the lateral ligament of the ankle joint. We make use of this fact in reducing the fracture, for by strongly inverting the foot we draw the lower end of the fibula medially by means of this ligament and so reduce the deformity. A general anæsthetic should be administered as soon as possible and the deformity reduced. The limb may be placed in a back splint with pads applied under the side splints to maintain the reduction. A piece of adhesive plaster applied to the sole of the foot may be made to suspend the foot to the footpiece (Scudder). In some cases this will suffice. In others the deformity recurs to a greater or lesser degree and the prevention of this is our principal task. The backward displacement is the most difficult to maintain reduced in my experience.

I often use a plaster of Paris splint in these cases applied with the foot strongly inverted and dorsiflexed. These are the cases in which the posterior part of the tibia is split up and goes backwards along the foot. They are very difficult to manage. In a few cases I have found tenotomy of the *tendo Achillis* necessary. The plaster is cut into two portions and the site of fracture frequently inspected.

A Croft's splint is an excellent one and acts in the same way. It can be easily removed and the limb inspected. Dupuytren's splint may be used when there is no tendency to backward displacement. I have found it difficult to prevent backward displacement with this splint.

The Schmerz hook may be applied to the *os calcis*. The limb is suspended on a Hodgen's splint. One can arrange the direction of the pull or extension so that inversion or eversion of the foot can be obtained. After ten days a plaster splint can be applied without removal of the hooks. When this has set the hooks are removed. Extension of 2.25 kilograms (five pounds) weight is usually applied in these cases.

When there is a tendency for the deformity to recur, I think it unwise to commence massage until about the end of the second or third week. From then on active movements may be encouraged, but no weight should be put on the limb until at least six weeks have elapsed. The patient is then permitted to walk, wearing on the affected foot a boot with a crooked and elongated heel, an outside iron and an inside T or valgus strap.

It is sometimes difficult to account for the pain in the region of the ankle joint of which some of these patients complain, even where the result is almost anatomically perfect. In others when the appearance of the ankle is not all that could be desired no disability is complained of.

No doubt there is often a functional element and the *Workmen's Compensation Act* may account for some of the "disability," but for how much? This is a question we are not infrequently asked in the courts of law.

AN OUTLINE OF THE POSSIBILITIES OF CANCER RESEARCH.

By WARNFORD MOPPETT, M.B., Ch.M. (Sydney),
Sydney.

ALTHOUGH it has been my privilege to be associated with that branch of the cancer problem concerned with radiation, I would like to make a general reference to other branches of the work because it seems that progress will be greatly delayed without close cooperation and as we approach the solution of a problem, all branches of study related to it tend to meet. Perhaps our most important coworker both in the present case and in the wider field which includes all pathological conditions, is the body itself whose defensive reactions we may endeavour to guide and to work in conjunction with, but never to ignore and I will give a general outline of the problem in terms of the different aspects of immunity.

When we consider the question of natural immunity which includes those inherited tendencies by which in response to an exciting cause a cell may become cancerous or show resistance to that process, we must for the present leave the question open. Statistics have been produced to show that heredity plays no part in the incidence of neoplasm, but most of us in our own experience can recall series of cases in the one family which can hardly be explained by the laws of probability. Moreover, it has been experimentally proved in the case of mouse tumours that an inherited tendency may be produced by suitable breeding such that practically all individuals become "cancerous" before they die from other causes. On the other hand it is stated that the incidence of hyperkeratoses and other semimalignant conditions due to chronic sunburn depends only on the degree of exposure and the degree of protective pigmentation indicating that for this particular condition hereditary influences play little part.

In the question of acquired immunity we are concerned with all those substances which may appear in the tissue fluids of the body in response to a cancerous invasion, and also those substances or factors which may act as predisposing causes to a neoplastic process, for immunity has both positive and negative aspects.

The endocrine organs have a profound effect on the normal growth of tissues and it is certain that in some cases, such as the cessation of growth of uterine fibroids following changes in the ovary at the menopause, a profound influence is exerted on a neoplasm for the effect does not necessarily follow changes in vascularity. I may also refer to the

mental attitude of cancerous patients, which, contrary to that of tuberculous disease, is typically one of depression. This may seem remote from the present subject, but we know that physical processes may influence bodily functions, such as digestion, through the medullary centres and the peripheral distribution of the sympathetic system. Though the connexion may be by means of the nervous system, more commonly the last link consists in the formation of a hormone and any influence on the progress of malignant diseases would fall under the latter class. Certainly few will deny that the mental outlook may influence the course of a bacterial invasion at least indirectly and bacteria are just as independent as malignant cells. Again, there can be little doubt that the endocrine organs control or influence the calcium-sodium-potassium metabolism and a disturbance of the equilibrium of these metals in the body has been cited as one of the possible factors in the causation of cancer. It would be unreasonable at the present stage to assert that changes in the endocrine system exert no predisposing cause on the incidence of neoplasm or to deny the need for research in this direction.

The question of antibody reaction is complicated, for though the cells of a neoplasm have in some mysterious way escaped from the laws of growth of the parent organism, still they have many of the characters of the somatic cells from which they are descended, and it is difficult in regard both to outside influence and to the body itself to find a means of selectively attacking the invading cells.

But malignant cells certainly have "weak points" which we may successfully attack, and as I shall discuss later, X-rays are among the most hopeful means at present available.

As far as antibody reactions such as occur with a bacterial invasion are concerned, the evidence for the most part is negative or doubtful. It is stated (chiefly from the result of mouse tumour experiments) that the subjects of malignant disease once started are less resistant to the process than normal individuals, but the admission of a negative phase of immunity practically demands the possibility of a positive phase.

The leucocytes may be conveniently considered at this stage. They act in conjunction with and are possible sources of antibodies and by their phagocytic action they act as scavengers attacking and removing any cell or substance which is not in its proper functional situation. Their connexion with carcinoma is undoubted; in all moderately advanced cases a leucocytosis occurs even when the effect of secondary infection can be excluded. Such a reaction is evidently purposeful as shown by the local accumulation at the growing edge of the neoplasm. Moreover, we have certain means of stimulating a leucocyte reaction and possibly in the future radiation may be used for this purpose. Under certain conditions of unusual stimulation the body may react by the production of immune bodies (leucocyte reactions may be included) in a degree which is able to produce effects far in excess of the

properties usually associated with such reactions. The crisis of pneumonia or the healing of extensive typhoid ulceration is none the less remarkable because of its familiarity. We know that in some cases new growths do retrogress under such conditions of enormous leucocytosis or antibody production whether produced artificially or in the course of an infectious process; indeed the method has been used with some success in the treatment of sarcoma.

When a tuberculous focus is removed by surgical means, the body tissues which have previously been overwhelmed by the toxæmia, are able to rally and organize a new offensive of such a nature that outlying nodules that have not been removed, tend to heal. Such a process does not occur in the case of incomplete surgical removal of a malignant growth. On the other hand we occasionally hear of cases of inoperable new growth with extensive secondaries which are completely cured by radiation. Can it be that in this case we may count on the cooperation of the body to complete the cure? Certainly the case is very different from that of surgical removal; presumably there are large numbers of malignant cells which have been destroyed and their autolytic products pass into the body fluids in large quantities to stimulate an immunity reaction. Moreover, many of the outlying cells which are not destroyed, will be damaged by the radiation, so that they may be more readily attacked by any defensive mechanism.

The growth of tissues *in vitro* may throw light on the antibody problem. Certain substances associated with embryonic tissues are necessary for the cultures; they have been named growth-activating substances and are probably related chemically to the vitamins and also to the enzymes and certain of the secretions of the ductless glands, being organic compounds in many cases probably of comparatively simple structure which in minute quantities act as a necessary stimulant to the protein metabolism in growing cells, for it appears that wherever continued active growth occurs, they must be present.

They are normally present in the growing organism which explains the use of embryonic extract in artificial tissue culture. But it has been shown that tumour cells which usually commence active growth in an adult organism, are capable of generating their own growth-activating substance. But the culture of tissues *in vitro* has revealed that tumour cells also secrete a substance which rapidly causes degeneration and cessation of growth in a much greater degree than adult or embryonic tissues; this necessitates more frequent subculture. Whether this substance acts in minute quantities like the vitamins or whether it represents merely an accumulation of excretory products, such as uric acid and products of nuclear degeneration, to which the tumour cells are sensitive, is not known, but it certainly represents a substance which in comparatively small quantities can exercise a profound influence on tissue growth and multiplication and in the case of the adult organism in which most of

the tissues are mature, the action would presumably be selective in a new growth.

In connexion with local immunity one of the best known exciting causes of carcinoma, that is the effect of chronic irritation, may be considered. The irritation may be of various forms, mechanical, thermal or chemical as in paraffin cancer. Then there is the effect of radiation which extends from the visible spectrum to the hardest rays, a fact which in itself is very difficult to explain. Possibly biological sources of chronic irritation as in a chronic infective process may also be included, or carcinoma following on syphilitic glossitis, a well established fact or again the chronic irritation which may follow an acute trauma such as a blow on the breast, which is certainly a common cause in the popular imagination. The various factors have in common great chronicity extending over many years and a tendency to cumulative phenomena. In fact there would appear to be some factor in common to all these processes. What actual change is produced in the cell we have no idea, but for cumulative action to occur, every single minute "dose of irritation" must produce a change in the cell which though invisible endures perhaps for ten or twenty years and shows its effect perhaps by contributing to the development of a neoplasm. The problem is quite distinct from cumulation of lead, for instance, which is merely a matter of difficult excretion. In connexion with the local reaction to an established neoplasm I have already referred to the leucocytes. The lymphocytes especially seem to respond to unruly epithelial growth; they probably act in conjunction with the antibodies as a kind of "local agent." As to fibrosis in its purely mechanical aspect there is a reaction in every tumour; roughly the degree varies inversely as the rate of growth, but it is seldom or perhaps never sufficient to crush out a growth unaided. But fibroblasts as typical mesodermal cells have far more important functions than the mechanical production of fibrous tissue. Tissue culture experiments have shown that a pure strain of epithelial cells *in vitro* grows independently like malignant cells, but if a strain of fibroblasts be added, they at once assume their normal structural arrangement as if they were in contact with a normal basement membrane. The control of growth is mutual; we are familiar with the fact that a cavity lined with granulations will close and leave a dense scar, but if we graft epithelial cells on to the granulations the process is arrested, the cavity remains patent and the fibrous tissue remains soft and vascular to nourish the epithelium.

The mutual interdependence of epithelia and mesoderm is purposeful in regulating the normal distribution of tissues and their restoration after trauma, but of the nature of the controlling influence or how it may become upset we have no idea. Possibly the study of tissue culture mixed with fibroblast or grafting from the point of view of hostility of the host may throw some light on the process.

It is known that we can stimulate local immunity to a growth by irradiation. Firstly we may increase the density of fibrous tissue, but what is more important is the prospect of modifying that mysterious local balancing influence by which different tissues are maintained in equilibrium, a factor which seems to be in abeyance in the case of new growth.

The radiation aspect of the cancer problem gives us one of the most hopeful forms of treatment at present available, but it is not at all unlikely that it may ultimately throw some light on the question of causation. In taking up this subject which falls under the heading of biophysics we find it necessary not only to include all the many clinical applications of X-rays, but in considering the ultimate form of action to study many problems in pure chemistry and physics.

The clinical application of X-rays, apart from their diagnostic use which at present gives wide scope for research and ultimate improvement, are now extensive. As a very convenient means of stimulating or depressing the activities of tissues they form a valuable addition to the drugs, physical agencies and surgical measures by which we may influence vital processes.

In almost every skin disease we may call in the aid of X-rays at one stage or another; then there is often the very successful treatment of goitre or derangements of certain other ductless glands. As another example I may cite the effort to stimulate or depress the hæmatopoietic function of the bone marrow or the treatment of various forms of splenic enlargement.

We are familiar with the use of X-rays to stimulate contracting scars to a more supple cellular growth, but in other cases irradiation is capable of producing dense fibrosis and the difference in dose and conditions is comparatively small; it is certainly not an instance in which a minute dose of irritant causes stimulation, and a larger one depression and ultimate death. Again in the actual treatment of neoplasm by radiation which consists essentially in producing a disturbance of the process of mitosis and as such is distinct from the irritative form of X-ray reaction, there are apparent inconsistencies. Occasionally a neoplasm clears up in a remarkable manner and in other cases with no apparent reason the results are disappointing. The want of uniformity is more than can be ascribed to mere questions of dosage; if the means of estimation at present in use would permit of improvement, the variation would still not be of greater order than that permissible in the administration of drugs, even where such an action is pushed. It would appear that we must presume the existence of some unknown factor and I shall suggest that this factor is simply a matter of wave length.

The results obtained by the biological application of the X-ray spectrometer explain in a very satisfactory manner the previous inconsistencies in radiation therapy and indicate the line of future research

which may place the matter on a more rational and scientific basis. It was found that practically all the clinical applications of radiation were represented by different effects on the chick embryo, which appeared separately and distinctly at different wave lengths.

It has been held that hard waves act merely by carrying the energy to a diseased region and that the actual effect is due to secondary soft radiation or rather to the relatively slow speed electrons corresponding to it. The principles of monochromatic radiation therapy on the lines here indicated cannot be reconciled with the above view, but a consideration of the original experiment with the spectrometer (an abstract of which appeared in *THE MEDICAL JOURNAL OF AUSTRALIA* of April 11, 1925), and the few facts I am repeating below demand that the biological effect has a very intimate connexion with the primary wave length or frequency used, even in the case of quite hard radiation. In many cases effects were confined sharply to the narrow band of wave length capable of exciting them; intermediate regions, even where the difference in wave length was slight, showed no effect at all. In the graphical representation of the original experiment this is well demonstrated in the case of atrophy; "Atrophy" was used in a technical sense to represent complete destruction and death of all components of the living membrane, all structure and staining property being lost in the four days' incubation following irradiation. It is by far the most intense and remarkable effect obtained, being in many respects a new effect of radiation, for it has previously been accepted that X-rays do not kill and in this case the energy used was minute in comparison with that which we are accustomed to use in clinical practice.

The effect which I have termed atrophy, is not the only remarkable result. In the graphical representation of infiltration by wandering amoeboid cells which was called leucocytosis, a certain minimal value is represented as occurring at all wave lengths, but a certain number of cells are normally present in the embryonic mesenchyme and others may arise in ordinary response to irritation. As far as a characteristic reaction to a certain wave length is concerned, we may probably represent the effect just as sharply and definitely as in the case of atrophy.

Loose cellular hypertrophy and dense fibrous hypertrophy appear as perfectly distinct entities, but the nodular reactions which were ascribed to scattered radiation and which are always present in some degree, show a rather mixed effect. The fact that the moving screen is converging on the narrow space formed by the base and sides of the spectrometer slit in the maximum region is amply sufficient to explain the effect as due to scattered and therefore mixed radiation.

The future clinical application is obvious. It has been objected that only a small amount of energy can be obtained in the form of monochromatic radiation, but if only a limited region of the spec-

trum is really effective in producing the result we desire, it seems of little value to employ a large amount of energy in the form of other wave lengths some of which have no effect at all, while others must have an undesirable effect. Indeed, there is some evidence that a characteristic reaction is actually inhibited by the admixture of wave lengths other than those required to produce it. The future of homeogenous radiation therapy on a rational basis is, I hope, assured.

There are several questions at present of a theoretical nature which follow from the original experiment and though they may not have any immediate bearing on the treatment of neoplasm, by showing lines of research by which we may investigate the properties of life, in their most fundamental aspect they may lead us ultimately to a better understanding of the cause of neoplasm.

In connexion with the possibilities of this class of work I would remind the reader that in the chick embryo experiments one wave length actually caused the epithelium to invade the mesenchyme and another slightly harder ray caused the epithelium to be invaded by leucocytes which are by origin mesenchymal cells. In other words it would appear that the equilibrium effect of tissues referred to under local immunity may be influenced in opposite directions by disturbing a structure or structures which correspond to two wave lengths which we can accurately measure.

Referring to the question of what particular region of the cell is affected, certainly new growth is in some ways a disorder of mitotic division and we have good evidence that these properties are vested in the nucleus and the centrosome. As to what part of the above structures is the site of electrical charges during certain phases of their activity, I believe that both are and the view has been advanced that a disturbance of these charges and their fields of force may so upset the normal function that mitosis may become impossible.

But the order of magnitude of the X-ray wave length is often less than that of the diameter of a single atom, especially in the case of atrophy of the original experiment which occurred in its greatest intensity at a comparatively hard ray, whose wave length as a matter of fact corresponded in magnitude rather to the nucleus of an atom. It would appear that whether the action occurs on a protein molecule or on an enzyme or in the ionization of some other structure or molecule in the cell, we must in the ultimate instance consider a single atom or more correctly the interior structure of that atom. We have little knowledge of the molecular arrangement in living protoplasm, but it is inconceivable that a hard ray would affect a protein or similar molecule as a whole; the magnitude of the protein molecule, for example, would be such that its diameter would be at least a hundred times the wave length of the hard X-ray, but if the effect is on a small part or on a single atom we may call in the aid of chemistry to investigate simple substances,

especially organic compounds such as dyes whose structure is comparatively well known, to discover what particular structure of the atom is affected. For example it might be advisable to work at such wave lengths as produce atrophy and later to apply the results to living matter, on which the X-ray effect must at one stage be a purely chemical problem.

It is generally accepted that all X-ray actions are probability events and this is undoubtedly in accord with experimental evidence; it agrees with accepted theories of electro-magnetic waves and atomic structure in conjunction with the quantum theory. But the regions of atrophy in the original experiment are certainly very profound changes (the cells being killed) and they are sharply defined as to wave length (there being no such effect on either side). The energy is ridiculously small compared with that required to produce an effect on the human skin, for example, and it is by no means an insensitive structure. Can we admit a probability effect in such a case? Rather it appears a more certain resonance effect with some structure in the interior of the atom (possibly in some cases the nucleus of the atom) and such a view is difficult to reconcile with the quantum theory which is now widely accepted.

Again it has been thought that light atoms have little connexion with hard rays, which is another way of stating the view that biological action is due to secondary soft radiations; but if we accept the results of the chick embryos experiments, it seems necessary to subject the light atoms, both in the free state and in chemical compounds to a more careful investigation. There is a possibility of producing resonant effects within some regions of the atom and in the case of the nucleus we may transmute the element with comparatively small energy. There is, further, the question of "subatomic" diffraction phenomena throwing light on the structure of light atoms and possibly the disputed lines of the *J* series may be connected with some such process.

I have drawn the attention of the reader to a few interesting deductions which follow from the original experiment. I have endeavoured to show that even at this early stage we must call in the aid of the fundamental sciences of physics and chemistry in our attack on the cancer problem.

The X-ray spectrometer perfected by Bragg appears to be the threshold of much new knowledge. It is a superfine microscope with which we can measure the interior of an atom; it is also a microdissection instrument because each wave length carries its quantum of energy also accurately known.

It is to be hoped that in the future with the support of many able friends the workers at the University may be able to make some contribution to the knowledge of the structure of matter as well as to bring about some practical help for suffering humanity.

COUNTERIRRITATION AND INCREASED VISCERAL FUNCTION.

By FRANK TRINCA, M.C., M.B., B.S. (Melbourne),
Caulfield, Melbourne.

WITH the constant addition to the medical armamentarium of more scientific adjuncts the time-honoured poultice of our medical forefathers, with its obvious powers of promoting resolutions of inflammatory states, cannot be said to have retained the status to which its powers still entitle it. It has been the experience of the writer to be asked by a patient if he is one of those old fashioned doctors who believe in such primitive aids, notwithstanding their consequent burden on the domestic staff. As the writer has witnessed the death of infants at a late stage of lung and kidney affections which might have been prevented by these simple aids, he feels that there is a need to prove whether any tangible benefits apart from symptomatic relief can be expected from counterirritation. It is a matter of daily clinical observation that the severity of any inflammatory condition is ameliorated by these measures. The benefit derived may be explained by tracing the course of an untreated pneumonia and comparing it with one in which counterirritation has been applied.

In pneumonia there is primarily an attack in the lung by an organism whose powers to maintain a foothold are aided by a toxic effect. This toxic effect is manifested by a local and general inhibition of bodily functions. The congestion and vascular stasis in the lung are results of a specific toxin acting with a minimum of resistance on the part of the tissues of the host; this defensive mechanism is dependent on the maintenance of normal circulation. As the toxins enter the circulation a general inhibition affecting every bodily system arises in addition to a local inhibition. The symptoms produced include mental and motor lethargy, dry skin, anorexia, stasis of the alimentary tract and partial anuria, all of which abet the organism in its offensive measures, while locally it flourishes in the congenial environment of its own poisons. Should spontaneous recovery ensue, mental tone and excitation return, the appetite is restored, the bowels act, urine is passed freely and sweating occurs. In the lungs active circulation is re-established and resolution takes place of the pathological changes.

On these grounds the problem presented to the medical practitioner is to seek for means of anticipating Nature's methods and to bring the offensive powers of local and general resistance into operation before the tissues have become devitalized by prolonged toxæmia. The rational procedure is, therefore, to commence treatment by overcoming alimentary and renal stasis by aperients and diuretics and to apply counterirritation over the area of skin segmentally equivalent to the affected viscus in the hope of causing stimulation in the viscus through reflex paths. That this can be effected has been proved experimentally by observations on the guinea pig and man.

An area of skin in the right loin of a guinea pig was shaven and counterirritation applied by means of *liquor epispasticus* for ten minutes until a slight erythema was produced. In another animal turpentine was used. The animal was then anaesthetized and the kidneys exposed. The right kidney was found to be swollen and much engorged and crimson in colour. The left kidney was pale and normal in appearance. The right renal vein was greatly dilated and on section the right kidney exuded an excess of blood. These changes were confirmed on microscopical examination. Repetition of the experiment yielded similar results.

The fact that renal function can be artificially increased suggests an avenue of research into the physiological activities of the kidneys. The writer, therefore, devised the following experiments.

Several persons were placed on a fixed diet and power to concentrate urea was estimated. Three days later at the same time the urea meal was completed and counterirritation by turpentine stupes was applied during the test. Polyuria resulted in all instances; this may be regarded as evidence of increased function. The following results are cited to illustrate the change in urea concentration. It should be mentioned that the increased volume of urine implies an increase in the amount of urea excreted.

TABLE I.

Time.	Urea Excreted.	
	Without Counterirritation.	With Counterirritation.
Before urea meal..	1.3%	1.2%
First hour	1.4%	1.5%
Second hour.. ..	1.5%	1.8%

TABLE II.

Time.	Urea Excreted.	
	Without Counterirritation.	With Counterirritation.
Before urea meal..	2.8%	2.8%
First hour	2.0%	2.9%
Second hour.. ..	2.5%	3.06%

It should be possible to elaborate on these lines a kidney response test to a measured amount of counterirritation. This test should be of value in conjunction with other tests.

The power to modify renal function appears to offer an opportunity of studying the vexed question of pure physical filtration or vital excretion as the basis of renal activity. If renal activity were purely dependent on the antagonism between blood pressure and osmotic pressure, the filtration curves during increased function should follow those characteristics of the urinary constituents when

filtration is carried out under pressure *in vitro*. Departure from the characteristic curves would signify a vital element of a selective nature. Many other tests have suggested themselves to the writer, such as the application of counterirritation to a patient with orthostatic albuminuria. If this condition were a vasomotor phenomenon associated with gravity effects, it should be remediable by reflex stimulation of the renal function. The following experiment proves that not only vascular function is capable of being reflexly stimulated.

Persons suffering from extreme visceroptosis were given a bismuth meal and were subjected to an X-ray screen examination. In one instance the stomach rested in the pelvis. Counterirritation was then applied for five minutes with turpentine stupes. The radiographer reported that the hypotonic condition of the stomach was converted into an orthotonic condition. The meal was seen to be forced upwards towards the epigastrium and the lower border of the stomach was raised nearly four centimetres. This method of examination can be applied to viscera under varying conditions. In this way a method is available for more exact diagnosis in conditions such as chronic ulceration. The increased tone and the change of contour may throw lesions not otherwise visible into relief.

Reports of Cases.

SCHMERZ HOOK IN FRACTURE OF THE LOWER END OF THE FEMUR.

By R. H. BRIDGE, M.B., Ch.M. (Sydney), F.R.C.S. (England),

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THE following case history demonstrates the value of the Schmerz hook in the treatment of fracture of the lower end of the femur. Dr. George Bell has suggested to me that the case should be reported in conjunction with his contribution on the subject of fractures of the lower extremity.

Clinical History.

J.S., a male, aged thirty-eight years, was admitted to my care at the Sydney Hospital on March 7, 1925, with a history of having slipped on an orange peel and fallen on some concrete.

Examination disclosed a comminuted supracondylar fracture of the femur with a longitudinal split of the shaft into the intercondylar fossa. There was a great deal of separation of the condyles which could be moved freely one on the other.

On March 9, 1925, a Schmerz hook was inserted into the lower end of the femur with an extension weight of 11.25 kilograms (twenty-five pounds). X-ray examination then showed that the fragments were in good position. The hook was removed on March 27, 1925, and a Thomas's splint applied without extension. With minor adjustments the position of the fragments has been maintained. Union is not yet complete, but is improving rapidly.

Comment.

Not the least interesting feature of this case is the severity of the fracture produced by merely falling to the ground. On first seeing the fracture I quite expected to obtain a history of a fall from a height. It could be

seen from examination of the skiagrams that grave disability would result if the separated and movable condyles were not restored to their anatomical alignment. Even with this achieved the transverse fracture of the shaft above still presented its peculiar problem. The Schmerz hook seemed to me to be admirably suitable. It exerts considerable lateral pressure on the condyle and in this case completely abolished the separation. The longitudinal pull on the hook corrected the transverse portion of the fracture and owing to the pressure of the articular surfaces of the femoral condyles against the articular surfaces on the upper end of the tibia the leg could be used as a lever to make sure that there was no sliding into bad position of the loose femoral condyles the one on the other.

This patient has not yet been discharged from hospital as his union is not complete, but I am confident of the end result.

TRAUMATIC NON-JACKSONIAN EPILEPSY.

By ARTHUR MURPHY, M.B., Ch.M.
(Sydney),

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General Hospital, Brisbane.

ON account of the apparently complete cure effected, I think it of interest to give details of the history of a case of traumatic non-Jacksonian epilepsy which supervened many years after the infliction of the trauma.

A male patient, aged twenty-five years, was referred to me by Dr. Talbot, of Rockhampton. He complained of constant headache and recurring fits. The headache was mainly localized in the right parietal region. The fits occurred without warning and did not begin in any particular area of the body. The whole frame seemed to be involved from the outset of each attack. Fits were occurring on an average five times during his waking hours and always during his sleeping hours to what he believed to be a less extent. I saw him in one attack; the onset was sudden and no Jacksonian phenomena were noted.

Fifteen years previously a 0.22 short bullet, discharged at close range, had penetrated his right eye from the front and had not emerged or come to the surface. The eye was destroyed. The patient recovered and experienced no discomfort of sufficient importance to be remembered for seven years. Then after a hard day's work in the hot summer sun he suffered from an intense generalized headache and a few hours later the first fit occurred. Both the headache which in time became localized to the right parietal region, and the fits had continued with varying, but increasing frequency. Except for the absence of the eye and his tired, drawn countenance no abnormality was discovered on physical examination. His cerebration was quick and his temperament bright. The headache, however, was so agonizing that he begged for a chance of relief at any risk; life under the existing conditions had ceased to be worth while and he had resolved on ending it.

Stereoscopic X-ray pictures revealed the almost undeformed bullet lying obliquely close to and behind the apex of the right petrous bone, seemingly on the surface of the tentorium. Operation subsequently showed that its lower extremity had entered the tentorium and that the whole bullet was surrounded by a fibrous capsule.

Under ether anaesthesia the skull was trephined just above the genu of the lateral sinus and the opening was enlarged into the small available space anterior to the genu. After elevation of the hemisphere forceps were easily passed to grasp the bullet. On account, however, of its apparently complete encapsulation and the absence of any signs of increased intracranial pressure on incising the *dura mater*, it was considered that in all probability the bullet was not itself the cause of the trouble and that the force necessary to dislodge it would cause hæmorrhage or oedema and that these would be likely to cause pressure on the vital centres in the brain stem. Accordingly it

was left *in situ* and attention was given to breaking away any adhesive formation on the under surface of the hemisphere along the track of entry of the bullet. Recovery was uneventful except for considerable irritability during the first three days.

The patient has reported himself lately by letter and states: "I have been all over western Queensland since the operation, working in shearing sheds and on stations doing very hard work at times and in very hot weather. Although it is now eighteen months since the operation I have never had any sign of a fit or a headache, so judging by my health now I think that I am completely cured."

It was the abject helplessness of this man's outlook that persuaded us to attempt to remove the bullet which before operation was regarded as the likely cause of his trouble. As stated this opinion was altered to blame the sequelae of the trauma to the cerebral hemisphere and a very mild attempt to deal with these latter has apparently brought about a cure. This seems to offer encouragement for further surgical interference in cases of cerebral trauma resulting in symptoms of delayed onset.

I am indebted to Dr. Talbot and Dr. Wooster, of Rockhampton, for very valuable assistance in this case and to Dr. McDowall, of this city, for excellent stereoscopic radiograms.

MYXOMATOUS NEOPLASM OF MASTOID REGION.¹

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Sydney.

V.H., a female child, aged eight years, gave a history of ten months suppuration from the right ear. A polypus was seen and removed from the ear ten months ago, no previous ear trouble had been noticed by the parents. On September 16, 1924, the right ear was again curetted for polypi. On November 29, 1924, a large number of polypi were removed from the right ear; the patient had been complaining of pain in the right ear for some days. A small abscess below the lobule on the same side was also noticed and drained. Polypi recurred rapidly and a right sided facial paresis was noticed on September 14, 1924; no oedema or tenderness was present in the mastoid region.

On December 17, 1924, an operation was performed on the mastoid. All the bony tissues in that region were found extensively necrosed and the process occupied by granulations and pus, the bridge crumbled away at a touch of the curette, the middle ear was filled with polypoid tissue and the whole of the promontory wall was absent. The vestibule was found to be full of sprouting polypi. Improvement in the child's general condition followed the operation and the wound looked healthy and clean until the second week in January, 1925. At this time what seemed to be a hernia of cerebral tissue appeared to be descending from the upper and posterior part of the wound cavity where the *dura mater* had been exposed at operation. This was protected and supported, but gradually increased in size. On January 16, 1925, the patient coughed up a small mass of tissue resembling a tonsil in shape and size. Dr. Keith Inglis reported that the piece of tissue was composed of cells of various shapes and sizes which were mostly round. Spindle-shaped mitotic figures, however, were numerous. Many blood vessels considerably necrosed were present. Dr. Inglis thought that the histological structure suggested a malignant neoplasm or angio-sarcoma. The source of this tissue has not been located.

Early in February, 1925, the patient had an attack of erysipelas principally affecting the nose and extending over the cheeks. This disappeared under treatment in less than a week. The tumour had by this time increased in

¹ Read at a meeting of the New South Wales Branch of the British Medical Association on April 16, 1925.

size and formed a mass protruding from the mastoid wound and the external auditory meatus. The facial paresis had improved considerably, but the patient's general condition was unsatisfactory and she had a daily rise in temperature, areas of necrosis began to appear on the surface of the tumour accompanied by fetor. The skin at the margin of the wound began to incorporate itself with the surface of the tumour and the edges had a puffy and gelatinous appearance. An X-ray examination of the head was made by Dr. Dight on July 26, 1924, and he reported that density between the parietal bones suggested the presence of tumour. A hernia also was visible. The patient throughout was clear mentally and intelligent, but she was inclined to drowsiness. She has, however, taken her nourishment fairly well.

On March 10, 1925, an operation was performed by Dr. Hipsley. The tumour was removed at the level of its plane of emergence from the mastoid wound. Moderately free bleeding took place from the stump. Dr. Keith Inglis reports that the tissue is soft and myxomatous looking and that it is not vascular. On microscopical examination the sections revealed no brain tissue. The specimen consists almost entirely of neoplastic myxomatous tissue, which is inflamed and necrotic in parts, especially near the surface. The myxomatous tissue is partly covered by squamous epithelium. The structure of the myxomatous tissue is akin to, but not identical with the material already examined which was said to have been coughed up.

It is interesting to note that during January, 1925, photophobia was present in the right eye and that contraction of the pupil was present. Later on the pupil became widely dilated, the lids closed and the eye-ball tender. The facial paresis has become very noticeable and the general condition has been failing, the patient becoming very emaciated. The skin edges of the mastoid wound have become increasingly protuberant and edematous and involved in the growth. Towards the end of March, 1925, the tumour began to thrust itself again from the wound and has rapidly increased in size.

At the present time a large cauliflower-like mass which sometimes bleeds, is growing from the wound. It is still increasing in size. The patient's reflexes are normal. She is listless and takes her food well, but is losing weight.

Post Scriptum.

The patient gradually became weaker and died on April 24, 1925. Unfortunately no *post mortem* examination was permitted.

PNEUMOCOCCAL ARTHRITIS.¹

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A CHILD, aged ten years, was admitted to hospital on September 13, 1924. No history of previous illness was obtained. Two weeks prior to admission the child had become feverish and drowsy and this was associated with vomiting and diarrhoea. After these symptoms had lasted for a week the patient complained of pain in the left knee and the thigh became swollen. The pain improved after two days, but the swelling remained. On the day following improvement in the knee the right hip became swollen and tender and free sweating occurred. On admission the child's temperature was 39.3° C. (102.8° F.), the pulse rate 134 and the respiratory rate 32 in the minute. The child looked very ill, his lips were cracked and dry and his tongue furred. No abnormality was discovered on examination of the alimentary, nervous, respiratory, cardiovascular or genito-urinary systems. The right elbow joint was red, swollen and tender and was held in a state of flexion. Great pain was present on movement. The left knee was red, swollen and tender. It was slightly fixed and great pain was present on movement. The swelling corresponded to the capsule of the joint. The left thigh

was swollen, no redness was present, but the child complained of pain on movement. The child was given salicylate of soda in doses of 1.2 grammes (twenty grains) every two hours for twenty-four hours, but no improvement resulted.

On September 14, 1924, the left knee joint was aspirated and forty cubic centimetres of straw-coloured fluid were withdrawn; this was followed by the aspiration of ten cubic centimetres of purulent sero material. Pneumococci were found in an immediate smear and anti-pneumococcal serum were given. Twenty cubic centimetres were given intramuscularly and this was followed by doses of thirty and forty cubic centimetres on succeeding days.

On September 15, 1924, the condition of both joints had improved. The temperature was 37.2° C. (99° F.), the pulse rate 108 and the respirations numbered 20 in the minute.

On September 19, 1924, forty cubic centimetres of sero-purulent fluid were aspirated from the left knee joint. At this time the leucocytes numbered 14,000 per cubic millimetre.

On September 23, 1924, the knee joint was becoming worse, oedema extended down the tibia. The right elbow joint was more painful, the condition of the hip joint was better. No organisms were obtained as a result of blood culture and X-ray examination revealed no abnormality.

On September 30, 1924, the child suffered from a sudden attack of abdominal pain with vomiting. The abdomen was definitely tender above McBurney's point and some rigidity was present. No abnormality was found in the chest. An immediate operation for acute appendicitis was performed, but the appendix was found to be normal. On October 3, 1924, the child was very ill, the temperature was 39.4° C. (103° F.), the pulse rate 124 and the respiratory 38. The knee was very swollen. The knee joint was incised that afternoon and Carrel Dakin tubes and a large piece of rubber tubing were placed transversely through the joint. The elbow joint was also incised.

On October 5, 1924, some improvement was noted and Carrel Dakin irrigation was still being used. On October 12, 1924, the wound of the elbow and the appendiceal region were healed. The knee joint was improving and Carrel Dakin irrigation was suspended. On October 14, 1924, the large drainage tube was removed from the knee. The temperature of the child was normal except for a slight evening rise. The child steadily improved and the knee had almost healed on November 11, 1924, when he was sent to the convalescent home at Collaroy.

On April 6, 1924, the child was re-admitted for straightening of residual contractures which resulted from the previous treatment. As a result of X-ray examination it was reported that there was a diminution in the joint space of the left hip and that an alteration in the shape of the femoral head had brought about an appearance similar to that seen in Perthes's disease. The child is undergoing massage and the adhesions are being broken down under general anaesthesia. The prognosis is excellent.

Reviews.

TUBERCULOSIS.

IN the second edition of "Tuberculosis: Its Prevention and Treatment," Dr. John Laird gives his experience of some aspects of tuberculosis for the benefit of students and nurses¹. The book is written in a simple manner, but contains little new information. In the chapter on motherhood and childhood the author shows how necessary is the care of prospective mothers and later of the child, if tuberculosis is to be controlled in later life.

The rules laid down regarding the treatment of disorders of digestion are simple as is his advice for the

¹ Read at a meeting of the New South Wales Branch of the British Medical Association on April 16, 1925.

¹ "Tuberculosis: Its Prevention and Treatment," by John Laird, L.R.C.S., L.R.C.P. (Ireland); Second Edition; 1925. Bristol: John Wright & Sons, Limited. Crown 8vo., pp. 130. Price: 5s. 6d. net.

treatment of lesions in the bones and lymphatic systems. All his advice is along plain medical lines and could be carried out by anyone; he includes a few simple prescriptions. Much is made of the use of calcium salts and a warning is given as to their use in rheumatism and cancer.

A less pretentious title would have suited this book better and one wonders why a second edition was necessary. However, for a student or nurse it supplies information easy to read and easily understood.

HALF A CENTURY OF MEDICAL PROGRESS.

"FIFTY YEARS OF MEDICAL PROGRESS" is a monument of industry, but it is not history. It is an amorphous collection of great names, great discoveries and great achievements set out in alphabetico-chronological disorder.¹

Here are the names and in many cases the photographs of the champions who have victoriously withstood the "Men of Death," of the strategists who by cunning investigation have wrested from disease some of its secrets, and of some of the martyrs in the cause of humanity. The author has spared neither pains, time nor enthusiasm in the collection and collation of a bewildering wealth of facts, but in the end the result is disappointing. It is as orderly as a well-kept cemetery and as inspiring as an etymological dictionary. It may be that the selection of the material is faulty and imparts a feeling of anti-climax. After the thrill of satisfaction occasioned by reading of the advances during the last fifty years in the construction of hospitals, the information that "the hypodermic syringe was introduced by Francis Rynd in 1845," looks petty. In perusing the book one gets some surprises; such for example as the statement that Jacksonian epilepsy had been described by Richard Bright in 1836, thirty-nine years before it received its "proper" name. What a tale Théophile Gautier would have woven around *Anonymous Londinensis*, that Egyptian medical student of blessed memory. The statement that in 1873 the urine was examined for specific gravity, reaction, albumin, sugar and casts prompts the question: "What do ye more than these?" Nevertheless one may in some degree discern a certain national tendency in the medical progress of the last fifty years. The German pre-eminence in bacteriological and chemical research; the intuitive originality of the French mind and the reasoned thoroughness and purposeful application to an end of the British and Americans.

Withal it is a book for a medical practitioner to have in his bookcase, for it will furnish him munitions aplenty wherewith to overwhelm the detractors of medicine. With it he may stop the mouth of the lay sceptic and buttress a doubtful argument with the circumstantial trivialities of name, date and nationality. And when he puts the book down he will have the sensation of having dined on an expansive *table d'hôte*—every item predestined, but alas, not also predigested.

AN X-RAY ATLAS.

We have received for review a work entitled "An X-ray Atlas of the Normal and Abnormal Structures of the Body," by Archibald McKendrick and Charles R. Whittaker.² The atlas is intended as a guide to the normal and abnormal appearances of the body structures and also includes some

of the more common injuries and diseases. The authors admit that study of actual negatives is better for teaching interpretation, but where these cannot be made available, there is a wide field for such a work as the present. The book is divided conveniently into various sections, arranged according to the different regions. An index is provided at the end of the work.

The bone work is by far the best we have seen in such a book; the skiagrams representing the various joints have been taken from varying positions while in the case of the ankle joint, particularly, we find skiagrams of this joint in all its various possible positions. Various ages of osseous development are depicted and these should be of great value to all interested in this department of medicine.

All the common injuries and diseases of bone are excellently illustrated. The dental skiagrams are rather below standard and show considerable elongation and distortion of the teeth.

In contrast to the excellent bone skiagrams are the reproductions of the skiagrams of the gastro-intestinal tract and of the gall bladder region. These are very much below present day standard. However the book is an extremely valuable atlas and should be in the hands of every medical man practising radiology.

PRACTICAL BACTERIOLOGICAL METHODS.

It is curious that such a book as Professor Mackie and Dr. McCartney's "Introduction to Practical Bacteriology" has never been written before.³ It was very necessary. The book is well-planned, evidently in the view that science is method. It is a complete compilation of approved bacteriological methods. Though intended for the student and unspecialized graduate, it may be said at once that a knowledge of the book's contents is an excellent foundation for a good research technique. This compilation contains much restatement of old matter but with economy of detail and without neglect of essentials. Medium making, for example, has far-reaching results—high-grade toxin production, anti-toxin yield and upkeep of immunized horses depend ultimately on such things as medium reaction and the structure of a particular peptone. In this regard it is interesting to note that Eyre's method is mentioned first and the hydrogen-ion second for medium standardization. That is as it should be. The chapter on the microscope is lucid and is perhaps the most necessary part of the book, for a microscope is seldom used well.

The section on the handling of laboratory animals, often the only aids to diagnosis or classification, is the best thing we have seen done in that way.

The serological section is adequate, though for pneumococcus typing no mention is made of the precipitin method which is less tedious and quicker than those the authors favour.

The bacteriology is technically complete, only a necessary amount of clinical matter being included. In passing we must say that we have little faith in "brilliant green enrichment," in which of course Professor Mackie has particular interest. Is it necessary or advantageous?

The authors within the self-imposed limits of a compilation put themselves above criticism, but what is really admirable is their exposition of sound method in condensed detail, enabling workers to secure accurate results without exasperating reference to inaccessible papers.

To the bacteriologist who is also a booklover, the paper and type will specially appeal. This little book may confidently be recommended.

¹ "Fifty Years of Medical Progress, 1873-1922," by H. Drinkwater, M.D. (Edin.), M.R.C.S. (Eng.), F.R.S.E.; 1924. London: H. K. Lewis and Company, Limited; Crown 8vo., pp. 196, with 37 illustrations on 35 plates. Price: 10s. 6d. net.

² "An X-ray Atlas of the Normal and Abnormal Structures of the Body," by Archibald McKendrick, F.R.C.S. (Edin.), D.P.H., F.R.S.E., and Charles R. Whittaker, F.R.C.S. (Edin.), F.R.S.E.; 1925. Edinburgh: E. & S. Livingstone; Demy 4to., pp. xvi. + 222. Price: 25s. net.

³ "An Introduction to Practical Bacteriology," by T. J. Mackie, M.D. (Glasgow), D.P.H. (Oxford) and J. E. McCartney, M.D., D.Sc. (Edinburgh); 1924. Edinburgh: E. & S. Livingstone. Crown 8vo., pp. 297. Price: 8s. 6d. net.

The Medical Journal of Australia

SATURDAY, MAY 30, 1925.

War Service Disabilities.

AFTER every serious war an attempt has been made to ameliorate the condition of the disabled soldier. In past ages this endeavour was often ill-planned and half-hearted. In modern times the causes of war disability and the late effects of injuries and illnesses contracted during war service have been carefully studied and liberally interpreted. The methods of assessment of war service disabilities adopted after the great war have varied considerably in different countries and even in different parts of the British Empire. Although the tendency is evident in Australia and to a lesser or equal extent in other parts of the Empire to have a sentimental regard for the individual, nations, races and tribes necessarily strive to attain supremacy and to preserve their economical and material ownership without regard to the rights of individuals or to their security or independence. During a war the nation, race or tribe is concerned solely with the fighting power of the firing line, the man power. The loss of lives, regrettable as it is, is nationally, racially or tribally immaterial, provided that the reserves are numerous enough to keep the front lines effective. After a war is over, the nation, race or tribe is constrained to take steps to proffer assistance to the disabled because of the heavy drain imposed on the treasury by a large section of the population being unemployable. Every able-bodied, healthy man and woman has a high monetary value to the State. Incapacity means a loss of production as well as an unnecessary burden to the community. Those who expect a State to exhibit the same sentiment toward the individual as the individuals have exhibited toward the country in times of danger, delude themselves. In 1914 a great army of Australians responded to the call and risked their limbs and lives for sentimental reasons, out of pure patriotism. The sacrifice was superb, for they not only faced danger and

death with equanimity, but voluntarily relinquished their permanent sources of livelihood for their country's benefit. Collectively the individuals of the community demanded at this stage that the State should make certain provisions for these brave men. They were paid a stipend according to their rank in the Australian Imperial Forces or other combatant or auxiliary forces. Employers were urged to keep their positions open, so that if they should return, they might again follow the same occupations as before the war. The State undertook to pay compensation for incapacity in direct proportion to the disability resulting from war service. They were to receive free of all cost medical and nursing care until their health was restored. Lastly the State undertook to give monetary compensation to widows and others dependent on the men who lost their lives as a result of war service.

Nearly a year ago a Royal Commission was appointed to inquire into the methods of assessment of war service disabilities. The fact that Dr. C. Bickerton Blackburn, O.B.E., was chairman, and Dr. A. V. M. Anderson, Dr. W. W. Giblin, C.B., Dr. E. Sandford Jackson and Dr. H. S. Newland, C.B.E., D.S.O., were the members of the Royal Commission, is sufficient to convince even the cynic that the interests of the returned men would be adequately safeguarded. All are medical practitioners of unimpeachable integrity; all are returned men in full sympathy with the Australian Digger; all have had extensive experience and technical training in the various phases of war disabilities. The Royal Commission has held an open inquiry. They have exhibited the utmost patience in listening to complaints and claims made by individual ex-soldiers, even though many of these complaints and claims could not be brought within the purview of their reference. They have found "after full and sufficient inquiry" that the present machinery for determining disability and assessing pensions is sufficient. They admit a relatively small number of exceptions, but they recognize the essential difficulties which have been operative in these exceptional instances. Their recommendations are generous. They include an increase in the

allowance paid to blinded soldiers, a permanent pension to be paid to soldiers who have become victims of tuberculosis as a result of war service, a more thorough and repeated examination of war pensioners, a recognition of venereal disease as a cause of disability and the provision of gratuitous treatment of the men infected while on war service and lastly several emendations of the law in regard to the payment of pensions in respect of the death of ex-soldiers and in respect of delayed disability. They hold that no medical representative should sit on the Repatriation Commission.

Few persons are aware of the real difficulties of assessing the degree of disability of ex-soldiers. And if it is not easy to determine the extent of a man's incapacity, how incomparably more difficult must it be to measure the extent of the disability that is attributable to actual war service. The medical officers in the Repatriation Department are highly competent to attack these knotty problems and they do not hesitate to seek advice when the solution is not clear. In all cases of doubt, the Digger is given the benefit, although he does not always recognize this. The Royal Commissioners refer to this aspect of the subject and express their admiration of the manner in which the work of the Repatriation Commission and of the medical officers is conducted. It is eminently satisfactory to know that despite the absence of sentimental concern on the part of the State for the welfare of the individual, the Digger is receiving a "fair deal." By sentimental concern on the part of the State, we are not referring to the professed concern which candidates for Parliament affect at election time.

Current Comment.

HÆMOPHILIA.

THE normal clotting of blood is due to the transformation of a soluble protein, fibrinogen into an insoluble modification, fibrin. At the same time a small amount of soluble globulin is formed from the fibrinogen. For the transformation of fibrinogen into fibrin the presence of thrombin is necessary. Thrombin has been called fibrin ferment, but it has been pointed out that this designation is unfortunate since thrombin acts quantitatively; that is to say a measured quantity will bring about the coagulation of a definite quantity of fibrinogen and no more. Thrombin as

such does not exist in the circulating blood. Instead another substance prothrombin exists. Prothrombin is in a condition of adsorption in the fibrinogen molecule. It is converted by calcium salts into thrombin. Both prothrombin and calcium salts exist in the circulating blood and for clotting of blood to take place another factor is necessary, otherwise intravascular coagulation would occur. The third necessary factor is known as thrombokinase; it is present in the formed elements of the blood, especially those rich in nucleo-protein. Thrombokinase, so called by Morawitz, has been identified by Howell as a phospholipin, cephalin. It is formed from shed blood by the disintegration of blood cells and blood platelets. Blood which is collected in paraffin coated tubes, does not clot because the blood platelets are not disintegrated since they do not come in contact with the glass. Blood plasma also contains an antithrombin which antagonizes the clotting action of thrombin. Howell's interpretation of the action of these substances is interesting and represents the second view of the mechanism of coagulation. He holds that antithrombin normally present in the circulating blood alone prevents the conversion of prothrombin into thrombin and that this conversion may be caused by the action of lime alone. He holds that in shed blood the tissue cells or blood platelets furnish a thrombo-plastic substance which neutralizes the action of antithrombin and permits calcium to act with prothrombin to form thrombin.

Hæmophilia is characterized by hæmorrhages which may be either spontaneous or associated with wounds. Many theories have been advanced as to the nature of the process involved. Sahli regarded hæmophilia as a cellular anomaly of both blood corpuscles and endothelial cells. He was one of those who regarded deficiency of thrombokinase as the underlying cause. Many others have held this view and it has been enunciated in many textbooks of medicine. The late Ivan Ashby discussed this subject with much clarity in this journal some years ago. Addis in 1910 investigated the cause of hæmophilia and made several important observations. He found that hæmophilic blood is quite as easily and as readily coagulated by hæmophilic thrombin as is normal blood by normal thrombin. He concluded that a deficiency in the coagulating mechanism is the sole cause of the condition, the delay in coagulation being due to the fact that thrombin takes an abnormally long time to form.

The ætiology of hæmophilia has been discussed recently by Dr. J. W. Pickering and Dr. R. J. Gladstone.¹ They state that it is well known that contact with wounded tissues is not necessary for the clotting of blood and refer to observations by the former that the detritus of leucocytes and blood platelets is not an essential factor in the inception of blood coagulation. They made some experiments on embryonic blood. On mixing the blood of eleven chick embryos with an equal volume of freshly shed, normal blood, clotting was inhibited. If the mixture was not made until just prior to the formation

¹ *The Lancet*, March 21, 1925.

of clots, no inhibition resulted. The blood of the eleventh day chick does not clot either at room or body temperature, does not give reaction indicative of either prothrombin or fibrinogen, but contains material which coagulates at 74° or 75° C. The blood of twelve day chicks clots rapidly at 34° to 40° C. It apparently contains fibrinogen, is clotted by thrombin and is partially clotted at room temperature by the addition of considerable quantities of thrombokinase. A mixture of this embryonic blood at room temperature with an equal quantity of normal human blood clots at almost the same speed as human blood. If the quantity of embryonic blood in the mixture be increased, some retardation occurs. The blood of fourteen day chicks clots rapidly on the addition of small quantities of calcium chloride. In other respects it behaves like the blood of adult birds. Drs. Pickering and Gladstone conclude that material protective against the inception of clotting is developed in the blood of birds prior to the development of its capacity to clot and that this material is not an antithrombin, as it does not restrain the later stages of clotting in which thrombin is formed. They hold that early embryonic blood differs from normal adult blood by the predominance of stable protective material. A series of observations were then made on two specimens of hæmophilic blood. In one patient the degree of hæmophilia was greater than in the other. The blood from each, however, bore great resemblance to embryonic blood. Both coagulated at 38° C. and both inhibited clotting when added to normal human blood, the inhibition being greater when blood from the patient with the more severe form of hæmophilia was used. The hæmophilic blood, like embryonic blood, was refractory to the action of thrombokinase and it did not clot on the addition of small amounts of calcium chloride. Reference is made to observations by Pickering and his co-workers as to the existence in normal circulating blood of a protective colloid which preserves the clotting complex of the plasma from change. When normal blood is in contact with surfaces which it wets, this protective colloid undergoes rapid change and is dissociated from the clotting complex of the plasma; prothrombin is then converted into thrombin and the subsequent normal changes occur. The addition of various inert protective colloids to freshly shed blood inhibits the coagulant action of thrombin on either blood or on fibrinogen. Hence they conclude that the absence of clotting in hæmophilic blood is not due to an antithrombin. The delay is due to the persistence or reappearance in adult life of an embryonic condition of the plasma and in both hæmophilia and embryonic blood a relative excess of a stable protective colloid occurs. In support of their contention Drs. Pickering and Gladstone refer to the observation of Hurwitz and Lucas that, although the total protein content of hæmophilic serum appears to be less than that of normal blood, a globulin is present in excess. They have found that at a time when it is highly protective against the clotting of adult human blood, embryonic plasma

consists mostly of material which coagulates at 74° to 75° C. and this is the heat coagulation temperature of a globulin.

These conclusions are of interest in that they show that yet another process is to be added to those dependent on variation in surface tension.

THE TREATMENT OF DELAYED OR UNDESCENDED TESTIS.

In considering the treatment of delayed or undescended testis it is necessary to have a clear conception of what is meant by the term. The use of the term undescended testis is not altogether suitable and McCutcheon in an article published in this journal in 1922 gave excellent reasons why the name delayed testis should be applied to this condition. McCutcheon defined a delayed testis as one which was not actually in the scrotum or which could not be drawn down and induced to stay in the scrotum without tension. Dr. S. Gaylord Sonneland has recently considered this condition.¹ He refers to observations on the microscopical structure of undescended testes removed by orchidectomy. The changes which have been found consisted in a variable thickening of the *tunica albuginea* and of the basement membrane of the tubules. The latter was frequently so thickened as to obliterate the lumen of the tubules. The spermatogenic cells were few in number and of irregular shape. Dr. Sonneland states that spermatogenesis is instituted at puberty and that in the case of an undescended testis spermatogenesis persists in a limited degree for a variable period. For this reason he advocates operative interference at the age of ten or twelve years before the boy reaches the stage of puberty at about fourteen years of age. He adds that if the testis is not brought down before puberty, the functional result following the operation will vary directly with the length of the period between puberty and the operation. This desire for early operation is manifested by most writers on the subject and by most authors of textbooks. McCutcheon showed that the advice is not sound. He found that of 1,845 boys examined 124 had unilateral or bilateral delayed testis, a percentage of 6.7. When he divided the boys into two groups, those fifteen years of age and over and those under fifteen years, the figures became more striking. Of 590 boys in the older group only one could be found with delayed testis, a percentage of 0.16. Of 1,255 boys under fifteen 123 were found to have delayed testis, a percentage of 9.8. Of 275 boys between the ages of five and eleven 49 or 17.8% had delayed testis. McCutcheon concluded that the normal hurrying up of developmental processes and physical growth which is associated with puberty, is the factor at work in hastening the last stages of descent of the delayed testis. He was justified in his conclusion that routine surgical interference at any stage before puberty is contra-indicated. McCutcheon's work should be remembered for unnecessary surgery is bad surgery.

¹ *Surgery, Gynecology and Obstetrics*, April, 1925.

Abstracts from Current Medical Literature.

THERAPEUTICS.

Action of Stropanthin in Health and Disease.

P. GANGULI (*Indian Medical Record*, February, 1925), spurred on by the researches of Mackenzie on the action of digitalis, has investigated the results of intravenous injections of stropanthin in thirteen healthy subjects and in sixty-three patients suffering from kala-azar. In the healthy individuals who were all between twenty and thirty years of age, the pulse rate was noted twenty times before and after the injection of half a milligramme ($\frac{1}{20}$ of a grain) of stropanthin. The average fall in the pulse rate was found to be 6.20. In a series of sixty-three patients suffering from kala-azar the fall of the average pulse-rate was 9.2 and in some cases was as high as eighteen per minute. The subcutaneous injection of a like quantity of stropanthin was ineffective in lowering the pulse rate of ten healthy persons in whom intravenous medication had previously lowered it from six to eighteen beats per minute. Ganguli has also found that intravenous injections of digitalin are ineffective in slowing the pulse rate before the second day of administration and then only by an average amount of 0.2 beats per minute.

Treatment of Morphinism.

C. RÖMER (*Klinische Wochenschrift*, February 19, 1925) states that, unlike alcohol and cocaine, morphine cannot be abruptly stopped. If this be done severe nervous disturbances and collapse are liable to occur. The dose must be gradually reduced over a period of at least a week. Sodium "Luminal" is the best substitute and should be used in maximal doses. When the morphine has been stopped finally, the "Luminal" should be given by mouth. Prolonged warm baths are very useful adjuvants to drug treatment. The prognosis should be guarded, as recurrences are common.

Iodine in Beri Beri.

H. W. RIDLEY (*Journal of Tropical Medicine and Hygiene*, March 2, 1925), a layman, had the opportunity of treating many patients with beri beri during a long residence in Singapore. He considered it a prime essential in the treatment of the disease that all collections of animal refuse should be removed from the patients' houses which commonly swarm with cockroaches and are built over fowl-runs and manure heaps. Cleanliness secured, Ridley instituted treatment with iodine, long used in the East Indies by the Dutch. Doses of 0.3 mils (five minims) of the tincture in a glass of water were given by mouth once daily and in many cases the swollen legs were rubbed with the same preparation. The results are

said to have been greatly superior to those obtained under the "Government" treatment by strychnine and digitalis.

Treatment of Certain Respiratory Diseases by Chlorine.

E. B. VEDDER AND H. P. SAWYER (*The Journal of the American Medical Association*, January 31, 1925) publish the second of their papers on the treatment of certain respiratory diseases by chlorine. Their earlier investigations, the results of which were published in March of last year, seemed to show that the insufflation for one hour of chlorine gas in a concentration of 0.02 milligramme per litre is effective in producing a bacterial cleansing of the upper air passages. Suggestive though this research may have been, it is vitiated by the fact that healthy volunteers were used for the work and that the gas concentration was higher than that now employed. Chlorine is now employed in a concentration of 0.015 milligramme per litre of air and the results of bacterial counts before and after treatment prove clearly that it is lethal to the flora in the airways. In one instance the "colony count" was reduced from twenty-five hundred to five hundred by the gas. Chlorine causes a local hyperæmia, stimulates the lymph flow and the discharge of mucus, thus carrying off organisms in large numbers. It is strongly disinfectant in virtue of its powers as an oxidizing agent. Nobody can assess the relative importance of these various properties in effecting a cure, but that the method is valuable seems undoubted. Of one hundred and thirty-three patients, some suffering from common colds, others from bronchitis or laryngitis, seventy-four were cured, forty-nine improved and ten unrelieved by the treatment. The present method of using the chlorine is more accurate than that of the first experiments, when the gas was merely liberated at a known rate into a chamber of known cubic capacity. The rate of absorption varies with the number of persons present in the room; the walls may themselves be absorbent and the moisture of the atmosphere gravely influences the results. These early sources of error are now avoided by the use of a simple and portable apparatus which delivers an air-chlorine mixture of constant concentration to the patient under treatment. An electrically driven blower which pumps air at the rate of twelve cubic feet per minute insures that the flow will be regular. Chlorine is generated by the electrolysis of hydrochloric acid, through which passes the current from two dry cells. The rate of liberation of the chlorine is regulated by a rheostat, the needle of which, once adjusted, is left at a constant point on the meter. Through a bag of muslin or paper, loosely adapted to his face, the patient breathes for one hour an air-chlorine mixture of uniform strength. A more elaborate outfit can now be supplied for use in hospitals

and other large institutions. It is found that hay fever, asthma and pulmonary tuberculosis are not benefited by treatment with chlorine. The consolidated lung of acute lobar pneumonia is likewise unaffected. Some persons manifest a hypersusceptibility to chlorine and should not be exposed to its irritative effects. Apart from these contraindications the treatment has a wide field of application. Age and early infancy are alike no bar. The authors report the successful treatment of bronchitis in a man of eighty-five years and the cure of whooping cough in a baby three months old. They consider, too, that the time will come when chlorine gas will be used prophylactically in schools, theatres and so forth and even in certain catarrhal infections in lower animals such as the influenza of horses and the distemper of dogs.

Quinidine.

S. A. LEVINE AND A. WILMAERS (*Boston Medical and Surgical Journal*, February 26, 1925) describe the results of the treatment of thirty-seven patients with auricular fibrillation and one patient with auricular flutter. There were sixteen males and twenty-two females, the ages varied from fifteen to seventy-eight. Twenty-three patients had signs of mitral stenosis and fifteen showed evidence of chronic myocarditis without valve changes. Some patients had not, but the majority had symptoms of heart failure. All patients were put to bed and treated with digitalis. When the full benefit of this treatment had been obtained quinidine was administered beginning with 0.2 gramme twice daily and increasing by 0.1 gramme daily until 0.4 to 0.7 gramme was given thrice daily for three succeeding days. If regular rhythm occurred 0.1 gramme was maintained thrice daily. The hearts of thirteen patients became regular for periods of one to nine months. In five patients the rhythm changed to auricular flutter for varying periods and eventually became regular or returned to fibrillation. There were three fatalities, one in a case of extreme heart failure and one in a patient in whom the onset of fibrillation was recent (three weeks). The autopsies in these instances revealed no evidence of thrombosis; a toxic phenomenon was the only cause to which death could be ascribed. In only four patients did the regular rhythm persist for more than a month and there was definite clinical improvement in but one of all the patients. The vital capacity of the lungs was measured before, during and after administration of quinidine, with no constant results. In some cases the pulse rate increased and nausea, vomiting, tinnitus and palpitation occurred after quinidine and disappeared when the drug was suspended. The authors conclude that quinidine sulphate is of no practical value in the treatment of auricular fibrillation when signs of congestive heart failure are present.

UROLOGY.

Perineal Prostatectomy.

E. DAVIS (*Journal of the American Medical Association*, December 20, 1924) advocates the use of sacral (extra-theal) anaesthesia for perineal prostatectomy. In 75% of cases perfect analgesia results. In the remainder some local infiltration of "Novocain" or inhalation anaesthesia is necessary. The other important adjunct to the operation is a specially designed hæmostatic bag distensible with water. Through the bag passes a stiff-walled tube for bladder drainage through the perineum. Traction on the bag is maintained by counter-pressure on the perineum. After distension and traction for several hours the bag is allowed to relax and collapse and is withdrawn after twenty-four hours.

Radium in Carcinoma of the Bladder.

B. S. BARRINGER (*Journal of Urology*, February, 1925) divides carcinoma of the urinary bladder into two broad categories: (i.) papillary carcinoma, (ii.) infiltrating carcinoma. In the first group are put all growths which are thought to be definitely carcinomatous as evidenced by necrosis of the surface, failure to react to fulguration or microscopical appearance of malignancy. In the second group are placed those growths which are found to be indurated by palpation or infiltrated by pathological examination of the bases of the tumour and the adjacent bladder wall. The author reports on the condition of eighty-four patients at times varying from one to eight years after radium treatment of malignant bladder tumours. When the tumour is small, glass capsules containing radium emanation ("seeds") are embedded in the tumour through the cystoscope and are left in place indefinitely. When larger tumours are present the bladder is opened suprapubically and the tumour sown with "seeds," except in the case of growths on the trigone or near the bladder neck, when too much pain is caused by leaving the glass tubes *in situ*. In such cases it is better to embed metal radium needles which can be withdrawn after a suitable number of hours. The author states that in judging the statistics consideration must be paid to the fact that he opened the bladder in all cases in which he believed the carcinoma to be confined to that viscus. Moreover, no matter how large the tumour was, he implanted radium, knowing that in many cases he could do but little. There were twenty-three patients with the papillary type; of these fifteen are apparently cured, in six the result has not been determined and two are dead. There were sixty-one patients with the infiltrating type; of these eighteen are apparently cured, in thirteen the result has not been determined and thirty are dead. The actual operative mortality of suprapubic implantation of radium is less than 2%.

The Heart in Prostatic Hypertrophy.

FREDERICK A. WILLIUS (*Journal of Urology*, March, 1925) has collected and studied the records of clinical and electro-cardiographic data relating to the cardio-vascular system in seven hundred and five non-selected patients suffering from prostatic hypertrophy treated during recent years at the Mayo clinic. Of these patients two hundred and ninety-three (42%) had cardio-vascular disease. The types of cardio-vascular disease were: 43% arterio-sclerosis, 36% arterio-sclerosis and hypertension, 17% hypertension alone, 8% *angina pectoris* and 4% other miscellaneous types. The incidence of the arterio-sclerotic and hypertensive types of cardio-vascular disease with prostatic hypertrophy is probably higher than in many other conditions occurring during similar decades of life. It is probable that chronic urinary retention with the resulting interstitial renal changes is an important factor in accelerating the progress of a mild or latent degenerative cardio-vascular lesion. In the complete group of seven hundred and five patients, three hundred and fifty-three (50%) were operated upon and of the four hundred and twelve patients without evidence of cardio-vascular disease, two hundred and forty-six (60%) were operated upon. Of the two hundred and ninety-three patients with cardio-vascular disease, only one hundred and seven (37%) were operated upon. No patient operated upon died of cardiac disease. The author claims that this record is partly due to skilful surgery and proper means of anaesthesia and partly to the careful selection of patients. Operation other than an emergency cystostomy under local anaesthesia is contraindicated during the stage of cardiac decompensation.

Perirenal Suppuration.

G. MARION (*Journal d'Urologie Médicale et Chirurgicale*, February, 1925) calls attention to the necessity for reconsidering clinical ideas in regard to the recognition of perirenal suppuration. The most important point is careful palpation of the lumbar fossa, while particular care is taken to compare it with the feeling of the opposite loin. There may be no mistaking a definite mass filling up the fossa, often rendering the parietes hard to the touch, while on the other hand careful examination merely reveals a lack of depressibility and suppleness on the affected side as compared with the other. This, however, is an important finding in a patient in whom the main symptom is localized pain in the costo-lumbar region. The aspect of the temperature chart varies; it may be irregularly oscillating or may remain normal. If a definite pyelo-nephritis is the starting point, there may be pus in the urine, but usually pus is absent. Swelling, oedema or redness in the lumbar region are the exception, even in the acute forms progressing rapidly to a fatal end. In some cases the evolution of the symptoms is fluctuat-

ing and intermittent as regards the pain and the temperature, but usually the local induration will be found to remain unchanged. Occasionally the evolution is of a chronic type, with no elevation of the temperature, but with the indurated area spreading slowly during several months, until finally a ligneous mass is formed in the lumbar fossa, enclosing rather small abscesses which are difficult to find at operation. In all types if medical treatment and external applications do not secure a speedy retrogression of the lumbar induration as well as of the pain and temperature, incision by lumbar operation is necessary.

Teratoid Tumours of the Testis.

A. L. DEAN, JUNIOR (*Journal of Urology*, February, 1925) gives his results in the treatment of teratomata of the testis. The disease is associated with a high mortality, as inoperable metastases to the lumbar lymph glands and the lungs occur relatively early. The safest and most efficient treatment is a combination of X-rays and surgery. Before operation the testis itself should receive low voltage X-ray treatment. In addition high voltage X-rays are directed towards the pelvic and lumbar lymph glands of the same side. At the end of three or four weeks the diseased testis is carefully removed. The operative risk makes removal of the retroperitoneal lymphatics inadvisable and furthermore, irradiation seems to accomplish as much. After discharge from hospital the patient is carefully examined once a week. X-rays are used regularly in the search for lung metastases. Two months after the first treatment another irradiation of the same intensity is given over the same areas. The intervals between observations are lengthened to a month and the rest between treatments becomes three or four months. Of seven patients with operable tumours, treated as above, five are living a year or more later and are apparently free from disease. Of forty-nine patients first seen with inoperable metastases and treated by radiation alone, ten are free from signs of disease.

Phenolsulphonaphthalein Test in Bilateral Renal Tuberculosis.

R. LEVY AND E. FALCI (*Journal d'Urologie Médicale et Chirurgicale*, January, 1925) consider that in bilateral renal tuberculosis, when information is desired as to whether the more affected kidney may be removed without immediate risk of life, phenolsulphonaphthalein gives more valuable information than other efficiency tests. If the phenolsulphonaphthalein output of the less affected organ does not disclose some effort at compensatory activity, the surgeon must abstain from operation under pain of a post-operative disaster. The actual reading from the less affected organ should show an increase of at least 25% on the normal minimum from one healthy kidney for any given period.

British Medical Association News.

SCIENTIFIC.

A MEETING OF THE NEW SOUTH WALES BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the Royal Alexandra Hospital for Children, Camperdown, on April 16, 1925. The meeting took the form of a series of clinical demonstrations by members of the honorary staff.

Pneumococcal Arthritis.

DR. P. L. HIPSLEY showed a patient who was suffering from pneumococcal arthritis (see page 567).

Stricture of the Oesophagus.

Dr. Hipsley's second patient was a girl who had been admitted to hospital on January 24, 1924, at the age of eighteen months. One month prior to admission the child had swallowed some strong caustic potash and had subsequently experienced difficulty in swallowing solids. One week prior to admission the child had been unable to swallow fluid and was rapidly losing weight. On examination under general anaesthesia a moderately tight stricture had been discovered at the level of the cricoid cartilage. This stricture had admitted a number 1 rubber bougie. It had been dilated until a number 3 soft rubber catheter had passed the stricture. For one week after dilatation the child had been able to take fluids and "Benger's Food," but two weeks later on had not been able to swallow custard and had again lost weight. The stricture had been dilated at intervals of two to three weeks for a period of twelve months and on December 5, 1924, gastrostomy had been performed. From this time onwards the general condition had improved. At the time of demonstration the oesophagus was still being dilated at intervals of two and three weeks, the child was still being fed through the gastrostomy tube and it was taking fluids and biscuits by mouth. The child's general condition was good.

Dr. Hipsley also showed a child aged three years suffering from oesophageal stricture. The report of this case will be published in a subsequent issue.

Fibro-Cystic Disease of the Femur.

DR. W. VICKERS, D.S.O., showed a male patient, aged ten years, who had been admitted to hospital on February 18, 1925, with a history of having had no previous illness. For five months prior to admission the patient had limped on the right leg. He had not complained of pain, had given no history of injury and had manifested no other symptoms. His general health had been excellent. The temperature and pulse and respiration rates had been normal. On examination a definite limp had been noticed on the right side with tilting of the pelvis and slight scoliosis. The apparent shortening of the right leg had been 4.3 centimetres (one and three-quarter inches) and the actual shortening had been 5.6 centimetres (two and three-quarter inches); the gluteal fold had been less noticeable on the right side. No wasting had been discovered and neither pain nor limitation of movement had been present. The von Pirquet reaction had been described as +++; no response had been obtained to the Wassermann test. A radiological report had been obtained to the effect that all the shortening was apparently situated at the lower end of the right femur and that the appearance suggested the presence of fibro-cystic disease of that bone. The child had been given sun treatment by Rollier's method and a Jones's abduction frame had been applied together with 1.8 kilogram (four pounds) extension.

On April 1, 1925, a radiological report had been obtained to the effect that no advance in the condition could be seen. At the time of demonstration the actual shortening of the leg was five centimetres (two inches). The patient's general condition was good and he did not complain of pain.

Hibbs's Operation for Tuberculosis of the Spine.

Dr. Vickers also showed a boy, ten years of age, who had been admitted to hospital on January 12, 1925. On

inquiry no family history of tuberculosis had been obtained and the child's previous history had contained nothing of importance. Twelve months before admission to hospital the child had fallen from a height of about four metres on to the buttocks. Eight days prior to admission he had ceased walking. Aching and pain had been present on movement. Examination had revealed a prominence in the region of the twelfth thoracic and first lumbar vertebrae. A reaction had been obtained to the von Pirquet test on January 21, 1925. The child had been treated by heliotherapy. The radiological report had indicated that the child suffered from tuberculosis of the twelfth thoracic and first lumbar vertebrae. Dr. Vickers had performed Hibbs's operation for fusion of the spinous processes of the vertebrae. The field of operation had extended from the eleventh thoracic to the third lumbar spines.

Dextro-Cardia, Pertussis.

DR. M. J. PLIMLEY showed a male child, aged ten years, who had been admitted to hospital on March 8, 1925. Several polypi had been removed from the child's nose in December, 1924. Six weeks prior to admission he had suffered from an attack of pertussis which had persisted. During the week prior to admission his general condition had become much worse and on admission he had been pale and listless and had been vomiting. Anorexia had been present. The temperature on admission had been 38.2° C. (100.8° F.), the pulse rate had been 100 and the respiratory rate 32 in the minute. On examination of the sputum no tubercle bacilli had been found, but streptococci had been present with pus cells and a few lymphocytes; no crystals had been found. On examination of the chest bilateral flattening had been evident and the ribs had been very prominent. Flattening had been more noticeable in the front of the chest in the lower costal area of the right side. Movement in this place had been diminished. Percussion on the right side had revealed an area of dullness anteriorly below the third intercostal space. This dullness had merged into the liver dullness and in the axilla below the sixth rib with dullness over the lower lobe of the right lung. Posteriorly the percussion note on the right side had been impaired over the upper part of the lower lobe of the lung. Over the remainder of the lobe the dullness had been pronounced. Auscultation of the left side of the chest had revealed vesicular breath sounds which were slightly diminished in the axilla. On the right side the breath sounds in front had been vesicular except for the base where they were amphoric in quality; amphoric breath sounds had also been heard together with fine râles over the lower portion of the lung posteriorly. Examination of the heart had revealed the condition of dextro-cardia. The heart sounds had been regular and of normal rhythm, but at the apex (to the right of the sternum) a mitral systolic murmur had been heard. No abnormality had been detected in any of the other systems. X-ray examination had confirmed the diagnosis of dextro-cardia and dullness at the posterior aspect of the right base. This had suggested to the radiographer the presence of either thickened pleura or of encysted fluid.

The child's general condition and the chest signs had remained unchanged until April 7, 1925, when the chest had been explored and ten cubic centimetres of slightly turbid fluid withdrawn. The report from the pathological department had indicated that the fluid was sterile on culture. No tubercle bacilli or pyogenic organisms had been found, but a definite increase in small lymphocytes had been noted. At the time of demonstration the breath sounds at the right base were low pitched and blowing in character, impaired resonance to percussion was present over the lower lobe of the right side with areas of definite dullness. The child's general condition was improving, he was gaining weight, was able to sit up and was much brighter.

Cretinism.

Dr. Plimley also showed a child who was suffering from cretinism. The report of this case will be published in full in a subsequent issue.

Laryngeal Diphtheria, Broncho-Pneumonia, Necrosis of Maxillæ.

DR. GARNET HALLORAN showed a female patient, aged two years and three months, who had been admitted to hospital on August 11, 1924. The child had been very ill on admission and was suffering from laryngeal diphtheria. The colour had been bad, recession pronounced and membrane had been present on both tonsils. On admission the temperature had been 37.8°C . (100°F .), the pulse rate 168 and the respiratory rate 40 in the minute. Twenty thousand units of diphtheria antitoxin had been given at once. From that time until August 28, 1924, intubation had been carried out three or four times a day. On August 30, 1924, the patient had been able to breathe comfortably without the aid of a tube, but suffered from a profuse nasal discharge. The temperature had been elevated and two days later a diagnosis of broncho-pneumonia had been made. For the following six weeks the child had been extremely ill and it had been necessary to use nasal feeding. The chest had been explored on two occasions, but no abnormality had been found. The nasal discharge had persisted. On October 6, 1924, the upper lip had commenced to swell and pus had been noticed coming down between the alveolar margin and the lip. Two lateral upper incisor teeth had been removed and pus had been discharged through the tooth sockets. The pus had contained Klebs-Löffler bacilli. On October 7, 1924, some antistreptococcal serum had been given intramuscularly in small doses and slight anaphylactic phenomena had followed. The swelling of the face had continued until December 2, 1924, and the drainage of pus through the alveolar process had persisted. On November 8, 1924, the child had suffered from an attack of gastro-enteritis and three days later nystagmus had been noticed. On November 14, 1924, the antrum had been examined with X-rays and found to be dull. At this time the child had been extremely ill, the pneumonia had been resolved and little hope of life had been entertained. Under light anaesthesia the right antrum had been punctured. No pus had been found, but as the patient's condition had been fairly good some necrosed bone from the right maxilla had been removed. For the following three days the patient had been moribund, but after that she had improved. The general condition had subsequently become excellent, though the nasal and alveolar discharges had persisted. Occasionally a small abscess had formed under the right eye, pus had been discharged after incision and eventually a small sinus had remained, which led down to the bone.

On March 10, 1924, the child had been discharged from hospital with instructions that it should be brought later on to the out-patient department with a view to admission for further operation. At this time no Klebs-Löffler bacilli had been present in the nose or throat.

Three days after discharge the patient had been readmitted with acute bronchitis which had disappeared after a week's stay in hospital.

On March 19, 1924, the patient had been discharged, but five days later had been readmitted with a swollen face. The child had looked very ill and had suffered from an abscess which pointed under the right eye. The abscess had been incised and at the time of demonstration the wound had healed. Pus was still draining freely from the right alveolar process. No further operation had been performed, the child's general health was excellent. She was running about and taking her food well.

Osteomyelitis of the Radius.

MR. F. C. ROGERS showed a patient, aged eight years, who had been admitted to hospital on September 10, 1924. The child had had no previous illnesses. Two days prior to admission he had fallen on his outstretched hand and jarred his elbow which had become progressively more painful. No constitutional symptoms had occurred. The temperature on admission had been 39.3°C . (102.8°F .), the pulse rate had been 112 and the respiratory rate 32 in the minute. Heat, redness and swelling had been present over the dorsal and volar aspects of the lower third of the right forearm and wrist. Acute pain had

been present on the slightest movement of the wrist. Movement at the elbow joint had caused no pain.

On the day of admission an incision had been made over the dorsal aspect of the right wrist. No pus had been seen and the periosteum had not been found raised. An X-ray examination had been made and reports received to the effect that neither bony involvement nor fracture was present. The child's condition had not improved and on September 12, 1924, the wound had been reopened. The periosteum of the radius had been found raised with pus on the surface of the bone. From September 12, 1924, to October 5, 1924, the wound had been steadily drained and the child's condition had improved. On October 5, 1924, extensive osteomyelitis of the whole of the radius had been found. The arm had been put on a cock-up splint and as no pain was present and some radial deviation had occurred, massage had been commenced.

On January 22, 1925, sequestrectomy had been performed and two sequestra, two and a half and five centimetres long, had been removed from the radius. From this on the wound had gradually healed. At the time of demonstration healing was complete and the arm was strong. Movement in the fingers was moderately good, but the wrist appeared to be fixed with a radially displaced carpus. The latest radiological report was to the effect that no union was present between the upper and lower ends of the radius and that dislocation forwards of the lower end of the arm was present.

Acute Epiphysitis of Neck of Femur.

MR. ROGERS also showed a female patient, aged thirteen years, who had been admitted to hospital on December 8, 1924. No history of tuberculosis had been obtainable. Three months prior to admission the child had been pushed over at school. One month later she had complained of slight pain in the right hip joint. This had been associated with limping and had progressively become worse. No other symptoms had been present. On admission to hospital the temperature had been normal, the pulse rate 116 and the respiratory rate 24 in the minute. A vaginal discharge had been present. Some pain had been occasioned by flexion of the right hip joint and limitation of movement in all directions had been noted. The great trochanter had been situated 2.5 centimetres (one inch) above Nélaton's line. Two and a half centimetres of shortening in the right leg had been found. No wasting had been present. The patient's serum had not reacted to the Wassermann test. Pus cells but no gonococci had been found in two vaginal smears examined. No reaction had been obtained to the von Pirquet test.

On December 15, 1924, radiological examination had been made and a report received to the effect that acute epiphysitis (? non-tuberculous) with upper displacement of the shaft and much absorption of the neck of the bone was present. A Hamilton splint had been applied with extension weighing 1.8 kilograms (four pounds). This had been increased to four kilograms (nine pounds) at the end of a fortnight.

On January 15, 1925, the patient had been able to abduct the leg further than before and no pain had been present. On January 30, 1925, the leg had been extended in abduction and 4.5 kilograms (ten pounds) had been applied. On February 12, 1925, definite improvement had been found on X-ray examination. On March 30, 1925, the splint had been removed. At the time of demonstration movement in all directions had been good and the patient had not complained of pain. Shortening to the extent of 1.25 centimetres was still present and it was intended to make further application of the splint with extension.

Pink Disease.

DR. L. H. HUGHES showed a female patient, aged twelve months, who was suffering from pink disease. The child had been breast fed for six months. Since that time it had been given "Lactogen" with orange juice once a week. Five weeks prior to admission the child had become restless and had been extremely fretful. It had cried continuously. Five days prior to admission a rash, resembling a "sweat" rash, and anorexia had been present.

The child had been constipated, but no vomiting or coughing had occurred. Sweats had been frequent and although the child was commencing to walk it had appeared to its mother to be "very weak." On examination the child had been well nourished. Its colour had been good. The throat had been normal and no abnormality had been detected in the cardiac or respiratory systems or in the abdomen. A definite muscular hypotonia was present at the time of demonstration. The hands and feet were pink and the child was irritable. No definite photophobia was present. The rash on the body resembled a sweat rash.

Renal Tumour.

MR. GORDON CRAIG showed a tumour of the kidney which he had removed at operation. The report of this case will be published in full in a subsequent issue.

Pes Cavus.

MR. R. B. WADE showed three patients to illustrate the results of operation for *pes cavus*. At operation on the first patient all the attachments to the antero-inferior end of the *os calcis* had been thoroughly stripped; the tendon of the *extensor longus hallucis* had been divided and it had been reattached on the under surface of the head of the first metatarsal bone. The tendon of the *extensor brevis digitorum* was still over active. Mr. Wade described the result as good.

In the operation of the second patient fasciotomy of the plantar fascia had been performed. The tendon of the *extensor longus hallucis* had been divided and it had been attached to the under surface of the first metatarsal bone. Mr. Wade described the result as moderately good.

At operation on the third patient the plantar fascia and some of the short muscles of the foot had been divided transversely. The tendon of the *extensor longus hallucis* had been divided and it had been attached to the under surface of the head of the first metatarsal bone. Mr. Wade said that the result in this patient was not as good as in the two previous cases.

Hirschsprung's Disease.

Mr. Wade also showed a specimen which had been removed from a child suffering from Hirschsprung's disease. The report of this case will be published in full in a subsequent issue.

Skiagrams.

Mr. Wade also showed skiagrams depicting the changes produced in tuberculosis of the hip and of the vertebral column.

Fracture of the Femur.

MR. SHEDDEN DAVIS showed two patients whom he had treated by Hamilton Russell's method for fracture of the femur; he also showed one patient who was under treatment by the same method.

Renal Tumour.

Mr. Shedden Davis also showed a tumour of a kidney which had been removed at operation. The account of this case will be published in a subsequent issue.

Sarcoma of the Brain.

MR. HUFF JOHNSTON showed a patient who was suffering from fungating sarcoma of the brain (see page 566).

Acute Epiphysitis.

DR. L. G. TAIT showed a child, aged three months, who was suffering from acute epiphysitis. Inquiry into the family history had revealed the facts that the maternal grandmother had died in childbirth, the cause of the grandfather's death was uncertain. The mother had been married for ten years. She had had four stillborn children, three of these were premature and one was born at full time. Three children were alive and healthy. The paternal grandmother was healthy. The grandfather had died of alcoholism. The father was healthy; his serum had not been subjected to the Wassermann test. The mother's serum had been examined four years previously at the

Royal Prince Alfred Hospital and had yielded a "+++" result.

The mother had noticed that the child's knee became bigger about one month prior to admission and that the right shin became swollen and shiny. The child had not been feverish and no other abnormal symptoms had been detected. As the child had not used the leg, the mother had been afraid of infantile paralysis and had taken the child to a doctor. The doctor had ordered mercury powders for the baby and some improvement had apparently resulted. The child had been sent to the Children's Hospital for X-ray examination. On examination the child was seen to be healthy in appearance, the colour was good, the pupils reacted equally to light and the tongue was clean. No abnormality was detected on the arms and the heart and lungs were normal. The lower end of the right femur appeared to be thickened, but not otherwise abnormal. The lower end of the right leg was swollen; it was hard, slightly red and painful. No fluctuation was present. The affected area corresponded to the lower end of the tibia. The temperature was normal, the pulse rate 100 and the respiratory rate 20 in the minute. The child's serum had been examined by the Wassermann test and had yielded a "+++" result. Dr. Tait said that the child was receiving weekly intramuscular injections of 0.05 gramme of "Neokharsivan." A radiological examination had been made and the radiologist had reported the presence of a localized area of osteomyelitis with much periostitis in the lower ends of the tibia and femur. The appearance was suggestive of syphilis.

Gastro-Enteritis.

DR. E. H. M. STEPHEN showed patients exemplifying severe types of gastro-enteritis.

NOMINATIONS AND ELECTIONS.

THE undermentioned have been nominated for election as members of the New South Wales Branch of the British Medical Association:

Tunley, Leslie William, M.B., 1924 (Univ. Sydney),
Gulgong.
Tunley, Marjorie Ethel, M.B., 1924 (Univ. Sydney),
Gulgong.

THE undermentioned has been nominated for election as a member of the Queensland Branch of the British Medical Association:

Cribb, Harold B., M.B., 1924 (Univ. Sydney), Brisbane.

THE undermentioned have been elected members of the Victorian Branch of the British Medical Association:

Barnaby, John Gowan, M.B., B.S., 1925 (Univ. Melbourne), Hawthorn.
Brown, David Officer, M.B., B.S., 1925 (Univ. Melbourne), Malvern.
Brown, Keith Brayton, M.B., B.S., 1925 (Univ. Melbourne), St. Kilda.
Buchanan, James May, M.B., B.S., 1925 (Univ. Melbourne), Malvern.
Carter, James Leontine Roy, M.B., B.S., 1925 (Univ. Melbourne), Hampton.
Chittick, Blanche, M.B., B.S., 1925 (Univ. Melbourne), South Camberwell.
Coombs, Francis Syndal, M.B., B.S., 1924 (Univ. Melbourne), Alfred Hospital.
Cooper, Eric Leonard, M.B., B.S., 1925 (Univ. Melbourne), Thornbury.
Davies, John Seymour, M.B., B.S., 1925 (Univ. Melbourne), South Yarra.
Goodman, Philip, M.B., B.S., 1925 (Univ. Melbourne), St. Kilda.
Henderson, Robert John Arnold, M.B., B.S., 1925 (Univ. Melbourne), Alfred Hospital.
Ingram, May Allison, M.B., B.S., 1925 (Univ. Melbourne), Toorak.

- Jacobs, Alfred Nailer, M.B., B.S., 1925 (Univ. Melbourne), Melbourne Hospital.
- James, Trevor Claudé, M.B., B.S., 1925 (Univ. Melbourne), Melbourne Hospital.
- Kerr, Alexander James, M.B., B.S., 1925 (Univ. Melbourne), Moonee Ponds.
- Kyle, Eric Walter, M.B., B.S., 1925 (Univ. Melbourne), South Yarra.
- McMahon, Henry Ernest, M.B., B.S., 1925 (Univ. Melbourne), Armadale.
- Nicholls, Ralph Whitburn, M.B., B.S., 1925 (Univ. Melbourne), Surrey Hills.
- Nicholson, Leslie Frank, M.B., B.S., 1925 (Univ. Melbourne), Northcote.
- Nye, Charles Wason, M.B., B.S., 1925 (Univ. Melbourne), Prahran.
- Peacock, William Knox, M.B., B.S., 1925 (Univ. Melbourne), Auburn.
- Robertson, William Alfred Eric, M.B., B.S., 1925 (Univ. Melbourne), North Fitzroy.
- Saleeba, Aneice Samuel J., M.B., B.S., 1925 (Univ. Melbourne), Essendon.
- Scott, Bruce Bayne, M.B., B.S., 1925 (Univ. Melbourne), Malvern.
- Sinclair, William George Gladstone, M.B., B.S., 1925 (Univ. Melbourne), Thomastown.
- Skelton, Esther Isabel, M.B., B.S., 1925 (Univ. Melbourne), Mildura.
- Stewart, Basil Francis, M.B., B.S., 1925 (Univ. Melbourne), Melbourne.
- Tallent, Gordon Murray, M.B., B.S., 1925 (Univ. Melbourne), Malvern.
- Wright, Grantley Alan, M.B., B.S., 1925 (Univ. Melbourne), Oakleigh.

Medical Politics.

NATIONAL HEALTH INSURANCE.

(Continued from Page 553.)

Institutional Treatment.

(a) *Hospitals*.—At the end of the year 1922 there were 161 general hospitals in New South Wales, Victoria 53, Queensland 97, South Australia 41, Western Australia 52, Tasmania 15, Northern Territory 5, making a total of 424 for the Commonwealth. The number of beds available in these hospitals was as follows: New South Wales 7,332, Victoria 3,627, Queensland 3,872, South Australia 1,578, Western Australia 1,729, Tasmania 736, Northern Territory 45, representing a total of 18,969 beds available in all general hospitals throughout Australia and equivalent to only 3.3 beds available for each thousand of population. The number of beds available in proportion to the population in the metropolitan areas is, however, considerably lower than this figure.

The number of persons who received indoor treatment in such hospitals in 1922 was as follows: New South Wales 96,978, Victoria 34,161, Queensland 45,622, South Australia 16,340, Western Australia 14,487, Tasmania 10,470, Northern Territory 151, a total of 218,920 for Australia, comprising 118,845 males and 99,364 females, equivalent to 39 per thousand of the total population, the estimated average period of indoor treatment per patient being twenty-one days. In addition a large number of out-patients also received treatment, concerning which no definite particulars are available, but the total number is estimated at 300,000.

Many public hospitals are controlled directly by the Government, whilst others are controlled by a specially constituted central body for the State and are administered by local organizations which endeavour to obtain as much local financial support as is possible by subscriptions, fees from patients and other efforts and are subsidized by the Government. Some hospitals have accumulated large balances for building purposes.

During 1922 the expenditure in connexion with general hospitals in Australia totalled £2,441,075, distributed amongst the several States as follows: New South Wales £1,051,405, Victoria £385,186, Queensland £510,672, South Australia £245,140, Western Australia £166,072, Tasmania £77,015 and Northern Territory £5,585, the total cost per inpatient per day ranging from 8s. to 12s. The revenue of £2,498,177 consisted of Government grants £1,106,160, fees from patients *et cetera* £408,336 and other sources £938,681, the Government grants being equivalent to 45% of the total expenditure. The expenditure on general hospitals has increased from £1,396,361 in 1917 to £2,441,075 in 1922. The bed accommodation in the same period has increased from 16,763 to 18,969 and the number of indoor patients treated from 174,387 to 218,209. The increase in accommodation has not conformed to the increase in expenditure.

The system under which a patient pays for treatment in public hospitals varies in each State. In some cases a fixed rate of 7s. 6d. per day is charged to cover all treatment with the exception of operations which must be paid for in addition when the patient is in a position to pay the fees. In other States the patient is charged according to his means to pay, the charge ranging from 6s. to 9s. per day, indigent patients being treated free of charge, the hospital committee having the responsibility of deciding what fees, if any, the patient is in a position to pay. In some instances a wage restriction is placed upon persons applying for treatment in public hospitals, but generally every case is considered on its merits, each patient's circumstances being investigated by a hospital official and the fee which he is asked to pay, is arranged according to his ability to pay.

Hospitals have different methods with regard to arrangements made with medical practitioners. In country hospitals they usually enter into an agreement to pay an annual salary, with the right of private practice and the right to charge for operations. This arrangement is not encouraged, because it is considered that if a person is a proper subject for hospital treatment, such treatment should include everything necessary. In the large public hospitals the honorary doctors are not permitted to charge for operations and the Government subsidy is generally granted with the object of providing treatment for indigent patients.

The voluntary system of contributing fees to general hospitals together with a system of Government subsidies is stated to be more desirable than a system whereby the whole cost of hospital treatment would be borne by the Government and the necessary funds raised by means of taxation.

Hospital accommodation in the capital cities throughout Australia is generally inadequate, the larger hospitals being often overcrowded. In most country hospitals, however, this state of affairs does not exist, as there are very often beds vacant, due to the fact that some of the hospitals were built at a time when considerable progress was expected in the districts concerned, but the expectations have not been realized. In mining areas where there has been a reduction of population owing to a slackening of industry, there is generally at the present time more than sufficient hospital accommodation available. Hospital accommodation throughout the Commonwealth could be more effectively and evenly distributed than at present. There is a centralization on metropolitan institutions owing to the fact that patients are of the opinion that they can receive more satisfactory treatment therein than in country hospitals, full facilities for adequate treatment not being available in some country hospitals. It has been suggested that these could be utilized for the semi-chronic cases now treated in the city hospitals, thus relieving to some extent the congestion which undoubtedly exists in metropolitan institutions. During the winter and at the time of an epidemic the facilities for institutional treatment are totally inadequate to meet demands. In outback areas it is stated to be impracticable to supply adequate institutional treatment owing to the great sparsely populated areas, but that state of affairs can be met to a great extent in many areas by an effective system of ambulances whereby patients can be transported to the nearest centre for treatment.

Maternity hospital accommodation is generally inadequate and the establishment of more maternity hospitals is very necessary in the interests of women and children, as well as for the training of nurses, the facilities for obtaining that training being considered insufficient at the present time; in the country districts especially there is a great paucity of maternity hospital accommodation and the extension of facilities for maternity treatment in country hospitals is essential. In the more populous districts maternity centres should be efficiently staffed training schools from which capable nurses could be requisitioned for domiciliary cases. With skilled medical attendance in well conducted hospitals, the mortality and morbidity amongst maternity cases is low. Nursing homes of the simplest and most economical character should be established within easy reach of the people's homes. Clinics for prenatal and postnatal care should be available, as well as child-welfare centres or baby clinics, either in connexion with public hospitals or preferably as separate institutions in order to provide sufficient facilities for the wives of breadwinners who are at present very often precluded from the benefits of public hospitals. There should be effective coordination of the various services operating under the maternity scheme.

A serious shortage of hospital accommodation for infants is also apparent, facilities for such treatment having only recently been instituted and it is found that the bed accommodation available has not met the demand, considerable extension being imperative and essential. Private hospitals are registered under the local authority and must conform to a certain standard, the registration dealing more particularly with the question of sanitary arrangements and the suitability of the hospital for the purpose for which it is intended, inspections being made by the public health authorities. It has been suggested that private hospitals could be largely extended under a system of Government subsidies as a valuable adjunct to medical attendance.

A great deal could be done in increasing the equipment of hospitals and in bringing it up to date. New discoveries and new methods render it necessary that a continual expenditure is involved in supplying the various institutions with modern equipment.

It is rapidly becoming important that adequate provision should be made in the more settled country districts for wards or hospitals for infectious diseases and in view of the close relationship of the public health administration a more complete association between the local health authorities and the hospital authorities is possible and desirable.

It is stated that under our present system the rich and the very poor are the best provided for as regards medical attendance, the former being able to obtain adequate medical treatment in private hospitals and the latter in public hospitals, but the intermediate income class who do not wish to go into or are debarred from entering public hospitals and who cannot afford to pay private hospital fees, are unable to obtain adequate institutional treatment. Intermediate wards where private practitioners could attend their own patients and where fees would be lower than in private hospitals, should be made available in connexion with the public hospital system. Every member of the community should be able to receive adequate hospital treatment and there is no doubt that the provision of an intermediate hospital system would give a great measure of relief, as it would enable adequate institutional treatment facilities to be made available to the large section of breadwinners who can afford to pay something, but not the full cost of the treatment they receive, and who thus require a certain amount of Government assistance.

(b) *Sanatoria*.—Government and private sanatoria have been established in each State for patients suffering from incurable diseases and for tubercular patients the functions of a sanatorium being the education and care of the patient and the prevention of the spread of the infection to others. The question of payment by patients in State sanatoria is purely optional and is not pressed. At the present time there are insufficient sanatoria in Australia to cope with the demand. Some existing institutions

have developed into homes for chronic cases which are kept indefinitely so long as they wish to remain and owing to the lack of adequate sanatorium accommodation persons in advanced stages are treated in the same institution as curable cases, which is a most undesirable arrangement. Tubercular patients are not at present compelled to enter or remain in a sanatorium and a great number of people suffering from tuberculosis are not in such institutions. Even if accommodation were provided for all cases, they would not all avail themselves of it, as many could not be induced to enter such an institution unless compulsory methods were used. A considerable proportion of pulmonary tuberculosis is directly passed from individual to individual and a careless patient or sufferer is a menace to his near associates, especially to his children. A person who has spent a few months in a sanatorium, has a far better chance of overcoming the disease and far lesser chance of spreading the infection than one who has not had sanatorium treatment.

Sufficient sanatoria should be established for the treatment of special diseases and any person in need of such institutional treatment should be able to receive it at once and should be compelled to enter a sanatorium. Patients should be trained in suitable light occupations which may be useful to them when they leave the institution and convalescent farms should be established where tubercular ex-patients can do remunerative work under medical supervision, whilst being trained in suitable branches of farming. Effective provisions for after-care should be instituted as it is stated that unless patients are regularly examined after they leave the sanatorium, they show symptoms of early relapse. When a patient leaves the sanatorium he should not be permitted to return to the same environment or occupation as that which caused the disease and he should be compelled to report at specific periods after release.

(c) *Laboratories*.—Most of the bacteriological investigations required are undertaken in the capital cities by the Government laboratories or public hospitals. There is very little bacteriological equipment, however, outside the metropolitan areas. The Commonwealth laboratories have been of very considerable assistance, but the laboratory system in Australia should be considerably extended, as it is considered that the purchase of equipment and the cost of its maintenance is so expensive that the Government should provide this service. The erection of Government laboratories in the various districts throughout the State is considered essential to an adequate medical service, as no scheme for medical attendance and public health would be adequate unless it included an effective laboratory system, comprising serum laboratories which make biological products, and diagnosis laboratories established to serve as public health agencies and which aim at providing service for the medical practitioner to enable him to make an early and accurate diagnosis of his patients. A medical practitioner under present conditions is unable to treat as many patients as was possible formerly and it would not be possible to carry on any national system of contract practice effectively without such laboratories.

(d) *District Nurses*.—Associations have been formed in the various States for the purpose of providing trained nurses for the outlying districts which are far from medical and nursing aid. The nurses treat sickness, accident and maternity cases and when necessary accompany patients to a doctor or hospital. The districts concerned raise the necessary funds locally and these are supplemented by the central organization from funds mainly obtained from charitable donations or in some cases with the assistance of a Government subsidy. Similar organizations are operating amongst the poorer class of people in the metropolitan areas and are really charitable organizations providing nursing assistance and relief for the sick poor in their own homes. The extension of these nursing societies is very desirable, as they afford a considerable amount of relief to necessitous cases and it is considered that Government assistance should be granted to such voluntary organizations.

(e) *Ambulance Transport Services*.—Ambulance transport services have been established in several States,

their functions being to render first-aid and to transport cases of sickness and accident to hospital. Funds are raised by voluntary subscriptions and by fees for services rendered, together with Government subsidies. In Queensland alone last year the Ambulance Transport Brigade attended 97,399 calls and travelled over 615,000 miles in connexion with the transport of patients to hospital. It is considered that ambulance services should be instituted and extended throughout the Commonwealth, as by such means it will be possible to make institutional treatment available to the population residing in less populated areas, as well as providing facilities for immediate first-aid treatment. In the large areas in Australia where the population is very sparse and scattered and where it is extremely difficult to provide medical services, friendly societies do not provide such services to-day. The people who go out-back are deserving of every help and consideration and it is essential that they should be included in the national health scheme. Your commissioners are of the opinion that a system whereby aeroplanes would be available for transporting patients from out-back stations to a centre should be given full consideration. In view of the aerial mail services which have been established in Australia and the possibility of the extension of these services, it should be possible to arrange for the aerial transport of patients to certain centres, at each of which it is desirable that a medical practitioner should be located.

(To be continued.)

Correspondence.

THE MECHANICS OF RESPIRATION.

SIR: Dr. A. B. K. Watkins has courteously but none the less trenchantly criticized that portion of my article which dealt with the anatomical changes in children suffering from adenoids. As the subject of postnasal adenitis formed only a small part of a discussion which I considered already over-long, I had necessarily to compress my views into a small paragraph. The following statement may explain in what degree my "theory" differs from that of Dr. Watkins.

A child suffering from postnasal obstruction has two "respiratory phases." In the first he attempts valiantly to maintain nasal respiration. During inspiration the intrapulmonary pressure becomes greatly less than that of the external atmosphere owing to the lack of a free flow of air into the expanding lungs. The chest wall is driven in at the regions of least support and as a result retraction of the lower end of the sternum or the development of Harrison's sulci or lateral retraction of the ribs with carination of the sternum (pigeon-breast) takes place. These deformities only occur when ineffectual attempts at nasal respiration are prolonged over a considerable period and when the thoracic walls are unusually pliant as in ill-fed, rickety children. If mouth breathing is established quickly, the entry of air into the lungs is free and deformities of the chest do not take place.

The second phase begins with the full establishment of mouth breathing. Little or no air enters the nostrils, the *ala nasi* become pinched and the anterior nares may be almost occluded. Much of the air inside the nose is absorbed. In this way the intranasal pressure becomes considerably less than the intraoral, especially during expiration, and the high "Gothic arching" of the palate develops.

"It is a clinical fact," writes Dr. Watkins, "that although a child with adenoids may show the chest changes referred to by Dr. McDonald, it will not show any of the nasal and aural changes until it becomes a mouth breather (either completely so or at night only). If his theory were correct, this would be reversed and when the child became a mouth breather the facial deformities would cease to progress." That the nasal changes do not develop till the child becomes a mouth breather, I agree, but I fail to see the reasoning in his second sentence. On the contrary, the facial deformities are dependent on the continuation of mouth breathing. Dr. Watkins has misunderstood my

view. Otherwise he would not write: "Differences in air pressure do not enter into the matter. How could they with an open mouth?" It is precisely because there is an open mouth (and a shut nose) that the pressure of air in the mouth becomes less than that in the nose.

Yours, etc.,

C. G. McDONALD.

Hurstville, May 14, 1925.

Congress Notes.

OPHTHALMOLOGY.

THE OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM and its affiliated societies will hold a convention of English-speaking ophthalmological societies and associations in London from July 14 to 17, 1925. The President is Dr. E. Treacher Collins, and the Honorary Secretary Dr. C. B. Goulden, O.B.E. We understand that invitations have been addressed to the various societies of ophthalmologists in Australia to appoint delegates to attend the convention. The opening will take place at the Royal College of Surgeons of England. A symposium on the evolution of binocular vision will be delivered by Sir Charles Sherrington, O.M., G.B.E., President of the Royal Society, Sir Arthur Keith, F.R.S., Sir Frederick Mott, K.B.E., F.R.S., Professor Elliot Smith, F.R.S., and Professor S. E. Whitnall. Dr. Gordon Byers will open a discussion on microscopy of the living eye. Sir John Parsons, C.B.E., F.R.S., will deliver the Bowman Lecture on July 16, 1925.

The social part of the convention has been carefully arranged and should provide attractive entertainment for all those attending. The fee for attendance is two guineas for those who are not members of the Ophthalmological Society of the United Kingdom; a fee of ten shillings will be charged for ladies accompanying members. A copy of the transactions will be addressed to each member of the convention. Mr. Leslie Paton, F.R.C.S., of 29, Harley Street, London, W.1, is the Honorary Secretary for Finance and Registration. Ophthalmologists desiring to attend the convention should communicate with him. The application should contain the name of the English-speaking ophthalmological society to which the member belongs, the name and address of the applicant and the number of ladies he desires to enrol as associate members and a remittance to cover the fee for admission should be enclosed with it.

Medical Prizes.

NICHOLS PRIZE.

AN advertisement will be found in this issue dealing with the second award of the Nichols Prize for the most valuable contribution toward the discovery of the causes and prevention of death in childbirth from septicæmia. The prize is valued at two hundred and fifty pounds and is in the gift of the Royal Society of Medicine. It is highly significant that this prize is being offered at the same time as the Melbourne Permanent Committee for Post-Graduate Work have referred the essays on the causes and prevention of maternal mortality and morbidity to the adjudicators. The Nichols Prize is open to all British subjects. It will not be awarded unless work of high merit is submitted. Intending competitors have ample time for original investigation, since the work will be received up to October 1, 1927. This is a further incentive to careful, patient and ingenious research.

CORRIGENDUM.

IN the issue of May 9, 1925, in the announcement that Dr. Alfred Oswald Barkley was appointed Junior Medical Officer at the Mental Hospital, Parkside, the fact that Dr. Barkley is a member of the British Medical Association was not intimated. We regret this omission which arose through an oversight.

Obituary.

CHARLES ORMONDE BIRCH.

We regret to announce the death of Dr. Charles Ormonde Birch which occurred at Balmain, Sydney, on May 17, 1925.

ERIC SINCLAIR.

It is with much regret that we have to announce the death of Dr. Eric Sinclair, of Sydney, which occurred suddenly on May 19, 1925.

Medical Appointments.

Dr. C. N. Atkins (B.M.A.) has been appointed Medical Officer of Health for the Municipality of Kingborough, Tasmania.

Books Received.

- A PRACTICE OF GYNÆCOLOGY, by Henry Jellet, M.D. (Dublin Univ.), F.R.C.P.I.: Fifth Edition; 1925. London: J. & A. Churchill; Royal 8vo., pp. xii. + 744 with 417 illustrations. Price: 25s. net.
- AIDS TO OBSTETRICS, by Samuel Nall, B.A., M.B. (Cantab.), M.R.C.P. (London). Revised by C. J. Nepean Longridge, M.D. (Vict.), F.R.C.S. (England), M.R.C.P. (London). 1925. London: Baillière, Tindall and Cox. Foolscap 8vo., pp. viii. + 228. Price: 3s.
- AN INTRODUCTION TO THE MIND IN HEALTH AND DISEASE: FOR STUDENTS AND GENERAL PRACTITIONERS INTERESTED IN MENTAL WORK, by T. Waddelow Smith, F.R.C.S. (England). 1925. London: Baillière, Tindall and Cox. Demy 8vo., pp. viii. + 236, with six coloured plates. Price: 10s. 6d. net.
- "BILHARZIA," A PAPER FOR THE PRACTITIONER (Reprinted from *The Journal of Tropical Medicine and Hygiene*) by F. Gordon Cawston, M.D. (Cantab.); 1925. London: John Bale, Sons & Danielsson, Ltd. Crown 8vo., pp. 20. Price: 2s. 6d.
- ESSENTIALS OF INFANT FEEDING, by E. A. Barton (Medical Officer to the Child Welfare Department, University College Hospital); 1925. London: H. K. Lewis & Company Limited. Crown 8vo., pp. viii. + 80. Price 3s. 6d. net.
- PHARMACODYMIE DES COLLOIDES, by W. Kopaczewski; Tome II: Proteinotherapie et Transfusion du Sang; 1925. Paris: Librairie Octave Doin. Crown 8vo., pp. xii. + 327.
- RECOVERY RECORD: FOR USE IN TUBERCULOSIS, by Gerald B. Webb, M.D., and Charles T. Ryder, M.D.; Second Edition, Revised; 1925. New York: Paul B. Hoeber, Inc.; Demy 8vo., pp. 79. Price: \$2.00.
- SCHOOL VISION AND THE MYOPIC SCHOLAR, by James Kerr, M.A., M.D., D.P.H.; 1925. London: George Allen & Unwin Limited. Crown 8vo., pp. 159. Price: 5s. net.
- SERUM DIAGNOSIS OF SYPHILIS BY PRECIPITATION: GOVERNING PRINCIPLES, PROCEDURE AND CLINICAL APPLICATION OF THE KAHN PRECIPITATION TEST, by R. L. Kahn, M.S., D.Sc.; 1925. Baltimore: Williams & Wilkins Company. Demy 8vo., pp. viii. + 237.
- SEXUAL HEALTH AND BIRTH CONTROL, by Ettie A. Rout; Foreword by Sir Bryan Donkin, M.D.; 1925. London: The Pioneer Press. Crown 8vo., pp. 71. Price 1s. net.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser," page xvi.

- ADELAIDE CHILDREN'S HOSPITAL, ADELAIDE: Honorary Bacteriologist and Pathologist.
- AUSTIN HOSPITAL, HEIDELBERG, VICTORIA: Honorary Physician.
- PARKSIDE MENTAL HOSPITAL, SOUTH AUSTRALIA: Honorary Physician.
- UNIVERSITY OF ADELAIDE: Demonstrator in Pathology.
- UNIVERSITY OF MELBOURNE: Department of Pathology, Stewart Lecturer and Demonstrator.
- WESTERN AUSTRALIAN PUBLIC SERVICE: Medical Officer of Schools.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429, Strand, London, W.C.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney.	Australian Natives' Association. Ashfield and District Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham Dispensary. Manchester United Oddfellow's Medical Institute, Elizabeth Street, Sydney. Marrickville United Friendly Societies' Dispensary. North Sydney United Friendly Societies. People's Prudential Benefit Society. Phenix Mutual Provident Society.
	All Institutes or Medical Dispensaries. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	Brisbane United Friendly Society Institute. Stannary Hills Hospital.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Contract Practice Appointments at Renmark. Contract Practice Appointments in South Australia.
SOUTH AUSTRALIAN: Honorary Secretary, 12, North Terrace, Adelaide.	All Contract Practice Appointments in Western Australia.
WESTERN AUSTRALIAN: Honorary Secretary, Saint George's, Terrace, Perth.	Friendly Society Lodges, Wellington, New Zealand.
NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington.	

Diary for the Month.

- JUNE 2.—Tasmanian Branch, B.M.A.: Council.
- JUNE 3.—Victorian Branch, B.M.A.: Branch.
- JUNE 3.—Section of Obstetrics and Gynæcology, New South Wales Branch, B.M.A.
- JUNE 4.—Section of Orthopaedics, New South Wales Branch, B.M.A.
- JUNE 5.—Queensland Branch, B.M.A.: Branch.
- JUNE 8.—Northern District Medical Association, New South Wales.
- JUNE 9.—Tasmanian Branch, B.M.A.: Branch.
- JUNE 9.—New South Wales Branch, B.M.A.: Ethics Committee.
- JUNE 11.—Victorian Branch, B.M.A.: Council.
- JUNE 11.—South Australian Branch, B.M.A.: Council.
- JUNE 11.—New South Wales Branch, B.M.A.: Clinical Meeting.
- JUNE 12.—Western Australian Branch, B.M.A.: Council.
- JUNE 12.—Queensland Branch, B.M.A.: Council.
- JUNE 16.—Tasmanian Branch, B.M.A.: Council.
- JUNE 16.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
- JUNE 17.—Western Australian Branch, B.M.A.: Branch.
- JUNE 17.—South Sydney Medical Association, New South Wales.
- JUNE 18.—Section of Paediatrics, New South Wales Branch, B.M.A.
- JUNE 23.—New South Wales Branch, B.M.A.: Medical Politics Committee: Organization and Science Committee.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

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